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THE

Victorian Naturalist

THE JOURNAL AND MAGAZINE

of the

FIELD NATURALISTS' CLUB OF VICTORIA

LVII
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MAY, 1940, TO APRIL, 1941

Hon. Editor : A. H. CHISHOLM, F.R.Z.S.

The Author of each Article is responsible for
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MAY, 1940



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*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Acting Editor: Dr. C. S. SUTTON

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1940

Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

DIAMOND JUBILEE, 1880-1940

VICTORIA PALACE, MELBOURNE, MONDAY, MAY 13, 1940,
AT 7.45 P.M.

(Members are requested to wear the Club Badge.)

PROGRAMME

Loyal Toast. National Anthem.

Welcome to Visitors, by the President, Mr. A. S. Chalk.

"The Club's Activities—Past, Present and Future," by Mrs. Blanche E. Miller.

Toast: "The Club and Its Pioneer Members," by Mr. J. G. Medley, M.A. (Vice-Chancellor, University of Melbourne).

Response to Toast by Messrs. Geo. Coghill and A. D. Hardy.

Presentation of "The Australian Natural History Medallion," by Mr. J. G. Medley, M.A.

Response by Mr. A. H. Chisholm, F.R.Z.S.

Toast: "The Kindred Societies," by Mr. G. N. Hyam.

Response.

Election of Members.

AS ORDINARY MEMBER

Miss Esme Johnston,
c/o 3XY,
Spring Street, City, C.1.

PROPOSER

Mr. F. S. Colliver.

SECONDER

Mr. A. C. Frostick.

AS COUNTRY MEMBER

Mr. A. Coulson, M.Sc.,
42 Gawler Street,
Portland, Victoria.

Mr. F. S. Colliver.

Mr. A. C. Frostick.

AS ASSOCIATE MEMBERS

Keith Petrie-Fairhead,
60 Young Street,
Frankston.

Mr. A. H. Chisholm.

Mr. A. S. Chalk.

George G. Collis,
S.S. 840, Bolwarrah,
via Ballarat.

Mr. J. Ingram.

Mr. W. H. Ingram.

The Victorian Naturalist

Vol. LVII.—No. 1

May 1, 1940

No. 677

PROCEEDINGS

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday, April 8, 1940. The President, Mr. A. S. Chalk, presided, and about 80 members and friends attended.

MINUTES

The minutes of the previous general meeting were taken as read.

WELCOME TO VISITORS

The President extended a welcome to the visitors present, and especially mentioned Dr. H. Flecker, a former member of our Club, and now President of the North Queensland Naturalists' Club.

SUBJECT FOR THE EVENING

As arranged, this was a lecture, illustrated by the Epidiascope, on "The Open Air Museums of Sweden," by Miss R. S. Chisholm, M.A. The lecture dealt with a large area of land reserved for museum purposes, and containing specimens of the various dwellings, etc., relating to earlier Swedish culture. The grounds also contained a zoological collection, pre-historic monuments, and a scientific museum, and were very well patronized. It was suggested that a similar museum could be got together in each Australian State. A series of photographs of suitable localities was shown. Several questions were asked by members, and answered by Miss Chisholm. The President then conveyed the thanks of the Club to the lecturer for her very interesting address.

CORRESPONDENCE

From Miss Burdett, of Basket Range, S.A., returning thanks for a letter of sympathy sent from the Club.

REPORTS OF EXCURSIONS

Excursions were reported on as follows:—Whitfield, Mr. H. C. E. Stewart; Bacchus Marsh, Mr. F. S. Colliver.

GENERAL BUSINESS

(a) Honour to Member.—The President announced that Mr. C. L. Barrett had recently been made a Fellow of the Royal Zoological Society of N.S.W. (F.R.Z.S.), and congratulated him on behalf of the Club. Mr. Chalk also mentioned that Mr. Barrett already was a corresponding member of the Zoological Society of London and the Zoological Society of New York.

(b) Mr. A. J. Tadgell, by letter, suggested that seeds of Australian native plants should be sent to the Australian Forces overseas. Mr. Chalk said the matter would be referred to the Committee for consideration.

(c) Death of Mr. Burdett.—Mrs. Barrett moved, and Mr. V. H. Miller seconded, a motion, "That a note of sympathy be placed in the next issue of the *Naturalist*, and that a copy be sent to Mrs. Burdett." The motion was carried.

REMARKS BY EXHIBITORS

Dr. H. Flecker spoke on cone shells from North Queensland, and gave details of a fatality due to a sting from a member of this genus. He exhibited X-ray photographs taken of live animals, one of a sea-snake containing three fish and a shrimp being of outstanding interest.

Mr. S. R. Mitchell spoke on currency and artifacts from Sweden.

NOMINATIONS FOR OFFICE-BEARERS, 1940-1941

The following nominations were received: President—Mr. L. W. Cooper; Vice-President—Mr. H. C. E. Stewart; Treasurer—Mr. J. Ingram; Committee—Mr. H. T. Reeves, Mr. Ivo. Hammet.

Further nominations will be accepted (in writing) at the next meeting.

ELECTION OF AUDITORS

Moved by Mr. F. S. Colliver, seconded by Mr. Geo. Coghill, "That the retiring Auditors, Messrs. A. G. Hooke and A. S. Chalk, be re-elected." Carried.

EXHIBITS

Mrs. C. L. Barrett.—Necklace made of opercula of marine shells from Wessel Islands, off north-eastern Arnhem Land. Poisonous cone shell from Crocodile Islands, Arnhem Land.

Mr. S. R. Mitchell.—Shell currency, Makira Island, British Solomon Islands. (Made from shell sections drilled, and then ground in a grooved stone to shape. Other objects used are teeth of bats and dogs, etc.) Neolithic flint artifacts from Sweden.

Mr. R. G. Painter.—*Gleichenia circinata*, growing as a pot plant.

Mr. Geo. Coghill.—Photo. of the Rev. J. J. Halley, an early President of the Club, and several examples of his ornithological work.

Dr. H. Flecker.—Many examples of X-ray photographs taken of live animals.

Mr. F. S. Colliver.—Specimens collected during the Bacchus Marsh excursion, including specimens of glaciated pebbles and glacial till, tertiary leaves and fruits, Carbo-permian and Triassic plant remains, and various dyke rocks.

BUSINESS FROM SPECIAL GENERAL MEETING

This meeting was called to discuss the proposed alteration of rules. The motion was seconded *pro forma* by Mr. L. W. Cooper and the following members spoke on the matter: Messrs. V. H. Miller, A. G. Hooke, E. E. Pescott, G. Coghill, H. C. E. Stewart, C. L. Barrett, and A. J. Tadgell (by letter). After the discussion, Mr. E. E. Pescott moved, "That this matter be postponed for six months." The motion was seconded by Mr. V. H. Miller, and carried.

NOTE

We have much pleasure in announcing that our esteemed late Editor, Mr. Charles Barrett, who has already the rare distinction in Australia of being a Corresponding Member of the Zoological Society of New York, and of the Zoological Society of London, has been further honoured by being made a Fellow of the Royal Zoological Society of New South Wales.

We are glad to say that our Editor, Mr. A. H. Chisholm, is out of hospital after an operation, and is making an excellent recovery.

ERRATUM

Page 190, lines 4, 5, should read, Mrs. M. E. Freame: Sea Slug, *Chromodrosis* sp. Stony Point.

SIXTY YEARS OF WORK—THE STORY OF THE FIELD NATURALISTS' CLUB OF VICTORIA, YEAR BY YEAR

By EDWARD E. PESCOTT

Author's Note: I have divided the record of the work of the Club into three periods of twenty years each. In the *Naturalist* for July, 1906, the Editor, then F. G. A. Barnard, gave a resumé of the work of the Club for the previous twenty-five years, recording the principal occurrences year by year. Again, in October, 1920, he did the same for the succeeding fifteen years. He then expressed the opinion that his "chronicling" was ended.

But this was not to be, for in July, 1930, the late Mr. Barnard had the unexpected experience of continuing his previous efforts by bringing the record along as far as the Jubilee. I have, then, written this story on his lines, and to that end have quite freely used his published material, adding brief biographies of the principal workers. Much help has been afforded me by Messrs. Charles French and George Coghill, our oldest members, on whose stores of memory I have quite freely drawn. A most informative article on the "Early Years of the *Victorian Naturalist*," by Mrs. Blanche E. Miller, in the *Naturalist* for June, 1934, has also yielded much grain. Her article is accompanied by a fine field-portrait of Mr. F. G. A. Barnard, one of Mr. T. A. Forbes Leith, and a photograph of an early excursion to Mt. Baw Baw, showing Messrs. F. G. A. Barnard, C. French, Jr., and others at the rest hut.

This record speaks for itself. If it is somewhat scanty or insufficient, if mention of any person or paper of importance has been left out, it is largely because of lack of time thoroughly to search the records, or lack of space.

The Genesis of the Club

In the middle seventies a small band of young men interested in natural history were wont to foregather, usually on Sunday mornings, to discuss their problems and display the "finds" collected on their Saturday and Sunday outings. Their meeting-place was the residence of Charles French at the Anderson Street frontage of the Melbourne Botanic Gardens, where Mr. French was propagator under Baron von Mueller. The chief "spirits" of these gatherings were Dudley Best, D. Kershaw, F. Barnard, J. E. Dixon, and occasionally one or two others. By special favour young Charley French was allowed to be present. In vain Mrs. French would call her husband to dinner, giving the others a broad hint to go home; but it was always difficult to get rid of them, so entrancing were their talks.

One day, Charles French said: "We ought to have a natural history club"; and this subject was often discussed, both at home and during their rambles to such far-distant fields as Brighton,

Kew and Sandringham. Finally, an advertisement signed by Charles French and Dudley Best called a meeting for May 6, 1880, with the result that about thirty men met in a room at the Melbourne Athenaeum, and Dr. T. P. Lucas was voted to the chair. It was decided to form The Field Naturalists' Club of Victoria, and a committee was appointed to draw up rules. The next meeting was held on Monday evening, May 17, when the rules were adopted and the first officers elected—Professor McCoy, Professor of Zoology at the Melbourne University, as first President; the Rev. J. J. Halley and Dr. T. P. Lucas first Vice-Presidents; Mr. Dudley Best, Secretary; Mr. Edward Howitt, Treasurer; and Messrs. C. French, J. R. Y. Goldstein, W. T. Kendall, T. A. Forbes Leith, J. G. Luehmann and J. Wing as members of Committee. It was agreed to hold the next meeting on the second Monday in June, and the second Monday in each month has been the meeting night ever since. The first excursion—to Brighton—was fixed for the following Saturday..

Fifty-six men were elected members in June and July, and these were afterwards termed "original members." Of these, only one now remains, Mr. W. M. Bale.

The June meeting was held in a room at the Town Hall, and the office-bearers had to give a full account of the objects of the Club, for the idea had somehow got abroad that one of these was the promotion of prize fights! The rest of the meetings for the first year were held at the Temperance Hall in Russell Street, and then in May, 1881, the Club moved to its present home, the Royal Society's Hall.

The first published list of members shows that by January, 1883, as many as 160 had been elected—six of them as honorary members—and it is probable that practically all the naturalists in the State had been enrolled.

The Personnel

The first President, Professor (afterwards Sir) Frederick McCoy, K.C.M.G., M.A., D.Sc., F.R.S., formerly of Dublin and Cambridge, occupied the Chair of Natural Science at the Melbourne University, lecturing on Chemistry and Mineralogy, Botany, Comparative Anatomy and Zoology, and Geology and Palæontology. Previously he had occupied important positions in the Old Country, and had written much on geology in Ireland and England. Here, he sat on many Royal Commissions, and was one of Victoria's most distinguished citizens.

He was the founder of our National Museum. The specimens at first contained in it were originally housed in the Government Assay Office, and it was proposed to transfer these to the Public Library in 1856; but the Governor, Sir Charles Hotham, thinking

it a useless fad to house stuffed birds and beasts, objected. There was much argument as to their location, and so one day the Professor settled the matter by "souveniring" the lot and, notwithstanding much protest, quietly took them to the University. To celebrate the incident *Punch* had an excellent cartoon entitled "The Successful Foray, or the Professor's Return." The Professor is depicted with a portfolio marked "Herbarium" under his arm, directing the removal of a trolley-load of birds, beasts and fishes to the University, which appears in the background. An accompanying poem, "The Raid of the Museum," commences:

"There was a little man,
And he had a little plan
The public of their specimens to rob, rob, rob,
So he got a horse and dray,
And he carried them away,
And chuckled with enjoyment of the job, job, job."

Professor McCoy, as President from 1880 to 1883, gave much credit and honour to this Club. His *Prodromus* is a valuable work of 20 parts, with coloured plates, covering many phases of Natural History.

The first Vice-President, the Rev. J. J. Halley, was born in England; his father, Dr. Halley, being then a classical tutor at Highbury College. Coming to Australia, he was induced by a Riverina squatter to accept the pastorate of his district. Mr. Halley thus became a "bush minister," and afterwards was often called the "Jackaroo Parson." In England he was greatly interested in birds, and on coming here continued his interest in them. He commenced the publication of a large quarto volume entitled *A Monograph of the Psittacidae, or Parrot Family of Australia*. A fragment of a dozen pages, with three fine colour plates, is in the possession of Mr. Coghill. The plates were painted by Jas. W. Sayer.

Mr. Halley was a distinguished clergyman of the Congregational Church, becoming minister to the Collins Street congregation and Secretary to the Congregational Union of Victoria.

In his later years, his increasing church duties compelled him to retire from the Club. He died suddenly in January, 1910, in his 76th year.

The Founder

The founder of the Club, Charles French, was born in England in 1840, and came early to Victoria, settling with his family at Cheltenham. He was undoubtedly a born naturalist and, as a boy, chased butterflies and beetles there all day long. He was first apprenticed to James Scott, a nurseryman at Burwood Road, Hawthorn; and later worked for Alex. Bogie, whose nursery was in South Yarra; and at the nursery of Joseph Harris, near what

is now the South Yarra station. Then he became propagater at the Melbourne Botanic Gardens under Baron von Mueller.

Later still he was appointed Government Economic Entomologist, being the first to occupy such a position in Australia. He wrote much on entomology, and his fine handbooks on *The Destructive Insects of Victoria* are still valuable works. The first paper read at the first meeting of the Club was one of his, on Victorian Ferns; later he read papers on the *Lycopodiaceae*, these being published in the *Southern Science Record*. He then read a series of papers on Victorian Orchids, which appeared in Vols. 1 and 2 of the *Victorian Naturalist*. Genial, always helpful, and an excellent collector and observer, Charles French was much sought after by other naturalists. A natural hesitancy of speech gave an extra flavour to the many "yarns" he was ever ready to tell of his experiences in the "bush." He died in 1933, and a biography, with portrait, appears in the *Naturalist* for July of that year.

Dr. T. P. Lucas came from England, was a keen entomologist; his English and Victorian collections were extensive. He was also a geologist and conducted several of the early geological excursions.

Joseph Wing was the publisher and proprietor of the *Southern Science Record*.

Dudley Best was an entomologist, with a leaning towards Coleoptera. He wrote several articles in the *Naturalist*. He was a severe critic, but always helpful and kind in his criticisms.

Edward Howitt belonged to the family which originated in William and Mary Howitt. His brother Alfred, who went for the remains of the Burke and Wills expedition, was also a member.

W. T. Kendall was a leading veterinary surgeon; Colonel J. R. Y. Goldstein, an agriculturist, with an interest in entomology; Thomas Augustus Forbes-Leith, an authority on Parrots; and J. G. Luehmann became our second Government Botanist.

This, then, was the team entrusted with the launching of the ship, which has successfully weathered the storm and stress of sixty years.

The "Southern Science Record"

The records of the earliest meetings, and papers of the Club, were published in this interesting journal, complete sets of which are now very rare. Mr. Joseph Wing, a member of the first Committee and a printer and publisher by profession, was its founder and owner. Commencing in December, 1880, and ending in January, 1886, it ran through forty-two parts in all, the later issues coming out very irregularly.

Joseph Wing was a tall, fine-looking man, who always appeared in public dressed in a frock coat and a belltopper hat; he was

enterprising in his work, but received little public support. Many valuable records appear in this journal, and it is necessary to consult it for much of the early work of our naturalists.

The coming of the *Victorian Naturalist*, published by the Club, really "killed" the *Record*, the forty-third part of which was prepared for publication, but was never issued. Very few of the last four parts ever reached the public. These are notable as having a very finely drawn cover design by P. Dattari, a member of the Club.

A full account of this valuable and useful journal will be found in the *Victorian Naturalist*, Vol. XVI, No. 1, page 112, May, 1899.

A Retrospect, Year by Year 1880 to 1900

1880-1.—The Club now, under Professor McCoy's presidency, went seriously to work. Charles French's articles on Ferns, Dudley Best's on Longicorn beetles, and W. Wooster's on Coleoptera, were of most importance; while other papers dealt with the Platypus, the Lyrebird, and a History of Dogs. Excursions were made to Mordialloc, Royal Park, Keilor and Cheltenham. Two orchids new for Victoria were discovered by Charles French, *Pterostylis* (*aphylla*) *parviflora* and *Eriochilus* (*Caladenia*) *fimbriata*.

This year the Geelong Field Naturalists' Club was inaugurated, with J. Bracebridge Wilson, M.A., Headmaster of the Geelong Grammar School as President.

1881-2.—Professor McCoy continued President. The Rev. J. J. Halley went on a visit to England. Wm. Denton, of Massachusetts, U.S.A., visited Melbourne, and delighted large audiences at the Athenaeum with his popular lectures on Geology. Papers were read by A. J. Campbell on Oology of Birds; T. G. Stone, on Carenums; D. Sullivan, on the Epacrideae of the Grampians. Baron von Mueller contributed descriptions of many new plants, and Mr. H. Watts dealt with the Seaweeds.

1882-3.—Professor McCoy was again President. Papers were read by T. A. Forbes-Leith on Parrots, and by C. French on Lycopodiaceae; while the previous "serials" were continued. "The Baron" continued to contribute descriptions of many new plants. H. T. Tisdall delighted the members with his water-colour drawings of native plants. The year ended with 170 members.

1883-4.—The Hon. Dr. Dobson, M.A., LL.D., F.L.S., M.L.C., formerly of Tasmania, and now Law Lecturer at the Melbourne University, became President. Vol. I, No. 1, of the *Victorian Naturalist* was issued in January, 1884, with Mr. A. H. S. Lucas, M.A., B.Sc., a Master of Wesley College, as Editor. C. French began his papers on Victorian Orchids; Leith and Lucas issued

Plate I



Rev. J. J. Halley.



Sir Frederick McCoy.

a catalogue of the Fauna of Victoria; Baron von Mueller continued his descriptions of new plants; and a most extensive exhibition was held at the annual meeting. Dr. Dobson urged the publication of a Dichotomous Key to the Victorian Plants.

1884-5.—The Rev. J. J. Halley was elected President, with F. G. A. Barnard (he was then F. Barnard, Jr.) as Secretary, and George Coghill as Assistant Secretary. J. F. Bailey, an enthusiastic conchologist and palaeontologist, died. In this year began an interest in the protection of native trees, when it was urged that those of Studley Park should be protected.

The Club held its first "camp out"—of nearly thirty members—at Olinda Creek, near Lilydale, from 7th to 10th November, 1884. A. J. Campbell discovered, for the first time in Victoria, the nest and eggs of the Helmeted Honeyeater, the taking of which resulted in a ducking in the creek.

1885-6.—The Rev. J. J. Halley was again President. Mr. C. A. Topp, M.A., who was afterwards Public Service Commissioner, became a prominent member. Mr. F. Reader also joined. The first "overland" expedition to Wilson's Promontory is recorded by J. B. Gregory and A. H. Lucas. Miss Flora Campbell, who became an eminent student and collector of fungi, made her début; and altogether this was a year of notable advance. Following Dr. Dobson's suggestion, Dr. Mueller exhibited completed copies of the second volume of his *Key to the System of Victorian Plants*.

1886-7.—The Rev. J. J. Halley was still President, with Baron von Mueller, K.C.M.G., Patron. The *Naturalist* for June, 1886, proudly showed its first illustration, an excellent reproduction of a Dattari drawing of *Phalacrognathus Muelleri*, McLeay, a new beetle obtained from North Australia by C. French. The membership increased to 200; excursions were made to the You Yangs and to Cape Woolamai. The annual conversazione was held at the Masonic Hall, Collins Street. Daniel McAlpine, later to become a famous plant pathologist, wrote his first article; and Baron von Mueller published descriptions of many new plants. Mr. W. Sayer, a nephew of Charles French, was sent on a collecting tour to Mt. Bellenden Ker, Queensland, by the Baron, who financed it, and the resulting collection of plant specimens was exhibited at the March meeting, these including *Rhododendron Lochae*, the only Australian *Rhododendron*, a notable discovery, and also a new nut-bearing tree, *Helicia Sayeri*.

1887-8.—Mr. A. H. Lucas, M.A., became President. Mr. Lucas came from England and became Science and Classics Master at Wesley College, Prahran, in 1883. He was later a lecturer at the Melbourne University. In 1893 he was appointed Headmaster of Newington College, Sydney; then Headmaster of Sydney Grammar School; and later Professor of Mathematics at the

Tasmanian University. Seaweeds and Algae were his chief interests. He was co-author with Professor Dendy of their well-known work on Botany; and, with Dudley Le Souef, co-author of *The Animals of Australia*, and *The Birds of Australia*. He died in 1936, and his biography appears in the *Naturalist* for July, 1936. The first steps towards making Wilson's Promontory a National Park were taken. The January *Naturalist* published an account of the King Island expedition, in which twenty-six members took part. Professor Baldwin Spencer joined the Club. The first excursion list was issued, and the membership increased to 210.

1888-9.—Mr. Lucas was still President. An exploring trip was made to East Gippsland in December, a complete report, with illustrations, being published in the following year. The explorers were Professor Spencer and Messrs. Charles French, Frost, Jackson and Searle. Mr. Alfred Howitt exhibited his interest in the Eucalypts by issuing his first *Notes*; C. French, Jr. writes his first article on a trip to the Upper Murray; the poisonous "Katipo" spider comes into prominence; and Baron von Mueller's descriptions continued. A list of members was published, many of them already notable, and many others who subsequently became very active workers.

1889-90.—Mr. C. A. Topp, M.A., was now the President. The membership stood at 210. There had been 550 members elected during the first ten years. The *Naturalist* for May, 1889, contained a full report of the expedition to East Gippsland, with several lithographed illustrations from drawings by Prof. Spencer. As a result of this expedition and report, the Minister for Lands added 8,500 acres to the forest reserve at Cabbage Tree Creek, so as to include all of the palms, *Livistona australis*, in the area. Several members attended the inaugural meeting of the A.A.A.S. at Sydney. Mr. Dudley Le Souëf and Mr. T. S. Hart, M.A., became Hon. Secretaries. Mr. F. G. A. Barnard was presented with a clock and a purse of forty sovereigns on the occasion of his marriage. The Rev. F. R. M. Wilson wrote extensively on Lichens, and George French discovered the new *Prasophyllum Frenchii* at Ringwood.

1890-91.—Mr. Topp continued President. The membership increased to 220, and two extended excursions were held, one to the Kent Group of Islands, and the other to the as yet unknown Yarra Falls. The reports of these trips were the first to be illustrated with lantern slides. The March-April issue contained seven photographs of the Cumberland and the Yarra Falls.

1891-92.—Professor Baldwin Spencer became President. Professor Spencer is too well known to require description. He was Australia's most famous anthropologist and ethnologist, and published many books on these subjects. He was a great traveller and explorer. He was also an excellent artist. He died while on

an ethnological exploration in Patagonia in July, 1929, and a full biographical paper by Mr. Kershaw, with portrait, appears in the *Naturalist* for September, 1929. There were now 235 members, but owing to the failure of the Metropolitan Bank, in which £68 of the Club funds was lodged, finances became strained. A camp-out was held at the Grampians, in Hall's Gap. Seven members attended and a full account of birds and plants noted there is published. Mr. A. J. Campbell urged the Government to impose a gun tax, and the Premier, Hon. James Munro, was favourable.

1892-93.—Professor Spencer continued President, with the Rev. W. Fielder as Hon. Secretary. The lack of funds owing to the bank failure and the reduction of members resulted in the Club postponing the annual conversazione and display. The transfer to Sydney of Mr. A. H. S. Lucas was a great loss to the Club. This year the Junior members were invited to display their collections, and prizes were awarded to them. Baron von Mueller presented these, and among the prize-winners were Charles Gabriel (for Mollusca) and Stanley Mitchell (for rocks and minerals). Both of these men are still in the Club.

1893-94.—Mr. H. T. Tisdall, the well-known botanist, became President, and Mr. F. G. A. Barnard, Editor. The Club was still feeling the depression. Professor Spencer and Mr. G. A. Keartland were away in Central Australia with the Horn Expedition, one of the most famous ever carried into the Centre. A very fine and voluminous report was subsequently published. Dr. Dendy, the botanist, became a Committee-man; *Grevillea Williamsoni*, discovered by the late H. B. Williamson, was so-named in his honour by the Baron; Oswald Lower wrote on Victorian Moths; the Baron still recorded many new plants; and Mr. Joseph Gabriel reported at length on the excursion of six members to Furneaux Island. This excursion report has an excellent illustration of Gannets on Cat Island, produced by the Crisp photo-process.

1894-95.—Mr. Tisdall was again President, and the membership now only 180. The conversazione was held at the Athenaeum, a charge to non-members being made. Anderson and Spry's book on Victorian Butterflies was published. The January *Naturalist* contained a report of the Club excursion to Albatross Island, which has—again by the Crisp process—two especially fine pictures of pelicans' nests and a "gorge."

1895-6.—Professor Spencer began his record year of office as President. The membership list was still smaller. The deaths were recorded of the Hon. Dr. Frank Dobson, Dr. Macgillivray, of Bendigo, and Mr. J. Bracebridge Wilson, of Geelong. Charles French, Jr., gave a long and comprehensive article on the "Flowering Times and Habitats of Some Victorian Orchids." Oswald Lower's articles on Moths continued; C. Maplestone recorded the

flowering of Orchids. The death was announced of Daniel Sullivan, a Schoolmaster of Moyston. Sullivan had a good knowledge of the flora of the Grampians, publishing many articles and lists thereon. He also wrote on the Droseraceae, Ranunculaceae, and Mosses. He lived for 27 years at Moyston, and was an indefatigable worker. An Orchid, *Caleya Sullivani*, and a Myrtle, *Calythrix Sullivani*, were named after him by Baron von Mueller.

1896-7.—Professor Spencer was still President; and during the year Charles French, Jr., became Secretary. The death of T. A. Forbes-Leith, an eminent ornithologist, was recorded. The conversazione was notable in that two of the greatest of living naturalists, Professor Sir Frederick McCoy and Baron Sir Ferdinand von Mueller, gave addresses, which regrettably were their last. The death of the Baron, who was much beloved, occurred in October, 1896, after a very brief illness. The October number of the *Naturalist* contained a portrait, and a very fine appreciation by Professor Baldwin Spencer.

1897-8.—The Founder, Charles French, F.L.S., became President, with Mr. George Coghill as Secretary. Membership was only 118, but the finances began to improve. A fund was started to establish a permanent memorial to the late Baron von Mueller. A Melbourne furrier was fined for offering for sale Lyrebirds' tails. In the *Naturalist* Oswald Lower completed in twenty-seven articles, his catalogue of the Victorian *Heterocera*.

1898-9.—Mr. Charles French remained President, with Messrs. J. Shephard and T. S. Hall, M.A., as Vice-Presidents. The membership improved, and a credit balance in the funds was shown. Professor Sir Frederick McCoy died on May 13, 1899, aged 76 years.

1899-1900.—Mr. J. Shephard, a well-known microscopist, became President. The membership increased to 147. The finances were buoyant and, after six lean years, another long expedition was held, this time at the Lerderderg River, near Bacchus Marsh. Charles Barrett was elected a member in September, 1899; and Professor J. W. Gregory, D.Sc., a world-eminent geologist, was elected in May, 1900.

Professor Gregory succeeded Professor McCoy as Professor of Geology in 1899. He did eminent work in the British Museum before his arrival here. He left us in 1904 to take the position of Professor of Geology at the Glasgow University. He was drowned while exploring in Peru in 1932. His books, *The Dead Heart of Australia*, *Geography of Victoria*, and *The Great Rift Valley*, are still eagerly sought after by students.

One of the earliest illustrations of the Mallee Hen's "egg-mound" is in the number for February, 1900, from a photograph by Dr. Charles Ryan.

Retrospect

After twenty years work, the Club could say that it had given a good account of itself. The leading naturalists in the State were its ardent supporters; much consideration had been given to the preservation of our fauna and flora, and a great advance had been made in Natural History work. Figures for twenty years are not available, but five years later the receipts totalled £3,080, and there was a credit working balance of £90; 664 papers had been read at the Club meetings and twenty-one volumes of the *Naturalist* had been published.

The Second Twenty Years

Encouraged by its success, and cheered by public support, the Club entered upon its second period of twenty years.

1900-1.—Mr. J. Shephard remained as President, with the same Vice-Presidents. Provision was made for the admission of country members. This year Dr. T. S. Hall published the *Catalogue of Scientific and Periodical Literature in the Melbourne Libraries*, a most useful work of reference, and Daniel McAlpine, the result of his research on *Fungus Diseases of Citrus Trees*. The following joined as members this year: Dr. C. S. Sutton, Messrs. H. B. Williamson and C. J. Gabriel.

1901-2.—Dr. T. S. Hall, M.A., was President, with Mr. J. A. Kershaw as Secretary. Dr. Hall was Lecturer on Geology at the Melbourne University, and his books on Victorian geology, notably *Hill and Dale*, found great popular favour. His papers and articles, with such titles as "A Hunt for a Name," "Whence came Our Australian Animals?" and "Ungarnered Grain," and much interesting matter in the *Argus* and *Australasian*, under the name of "Physicus," were always attractive and helpful. Dr. Hall was born at Geelong, and after education at Geelong Grammar School, became a Master at Wesley College. Later he was Director of the Castlemaine School of Mines and then Lecturer on Biology in the Melbourne University. Dr. Hall devoted much of his time to the interests of the Royal Society, the University Science Club, the Field Naturalists' Club, and the Australian Association for the Advancement of Science. He was keenly interested in Australian flora and fauna; and did yeoman service in securing the reservation of Wilson's Promontory as a National Park. His last paper, on "Victorian Graptolites," was published in July, 1914. Dr. Hall was one of the most valuable members the Club had ever possessed. A full biography, with an excellent portrait, appears in the *Naturalist* for January, 1916.

The membership was now 155, and the *Naturalist* became more popular. Much attention was paid, and many articles written on Ornithology. Members who joined this year were Messrs. H. J.

Grayson, A. D. Hardy and E. E. Pescott. Mr. Grayson was a member of the Melbourne University staff, who accompanied Professor Gregory on his expedition to the "Dead Heart of Australia" in the summer of 1901-2. The Club celebrated its twenty-first anniversary with a musical re-union, at which a presentation was made to Mr. George Coghill in recognition of his services. It was announced that of the 56 original members, about one-third had passed away. The Club adopted a shell common around Port Phillip Bay, *Nassa fasciata*, as its badge.

1902-3.—Dr. Hall retained the Presidency. The Club's roll was 172. Long excursions were held at Shoreham and at Launching Place. At the conversazione this year, special exhibits of wild-flowers were displayed, Mr. C. Walter naming them. Mr. G. Coghill brought 150 species from Bairnsdale. A committee drew up a schedule for the protection of the native animals and birds, with suggestions likely to assist the Minister in administering the *Game Act*. Mr. Frederick Chapman, Mr. R. A. Bastow, Dr. George Horne and Mr. J. A. Leach joined the Club.

1903-4.—Mr. O. A. Sayce, one of the original members, became President. Mr. Sayce was a member of Committee in 1886-7 and Librarian in 1887-8. He had a knowledge of Chemistry, and the Coleoptera were his special hobby. Later he turned his attention to the Crustacea. He was Lecturer and Demonstrator in Bacteriology to the Melbourne University.

A ten days' camp-out was held by a large party at Mount Buffalo. Mr. Chapman wrote, for the first time, on "Red Rain." Mr. Donald MacDonald became a member.

1904-5.—Mr. Sayce again filled the chair, with Mr. J. F. Haase as Secretary. The membership roll reached 206. During the year Mr. J. G. Luehmann died. He was an original member who had succeeded the Baron as Government Botanist, after having been his assistant since 1867.

Camp-outs were held at Warburton and the Otway Forest; and the reservation of Wilson's Promontory was further advanced. A full account is given of the Giant Trees of Victoria.

1905-6.—Mr. F. G. A. Barnard occupied the Presidential chair. Mr. Barnard was a naturalist with many interests, specializing early in Butterflies, and later in Trees and Physiography. He served on the first committee, was Secretary for six years, Librarian for three years, and during a great deal of that time was Editor of the *Naturalist*, continuing as such for more than thirty-two years. A full account of his life and work, with portrait, is given in the *Naturalist* for July, 1932.

The membership rose to 211, with 36 juniors and associates. The death was recorded of Mr. H. T. Tisdall, a well-known botanical worker. The Plant Names Committee was now occupied in choosing vernacular names for Victorian plants, and was com-

posed of Professor A. J. Ewart, who had recently come to fill the Chair of Botany in our University, and had been elected a member this year, as Chairman, Dr. C. S. Sutton as Secretary, and fifteen others. The April number gave a full report of the Club's excursion to Wilson's Promontory. Mr. Wisewould contributed an interesting note recording a Wallaby which had been seen swimming towards Phillip Island from San Remo.

1906-7.—Mr. Barnard was again President, with Mr. J. A. Kershaw as Secretary. There were now 235 members, with 25 associates and 120 junior members. A Christmas camp-out was held at Mornington, thirty members and fifty school teachers taking part in it. Mr. J. A. Leach organized the party, and in the March number of the *Naturalist* published a report of all its activities and of the lectures given. At the request of the Club, Malleson's Glen was permanently reserved as a beauty spot. Mr. F. G. A. Barnard issued his record of the first quarter of a century of the Club's life. Messrs. J. W. Audas and A. G. Campbell joined.

1907-8.—Mr. G. A. Keartland became President. Mr. Keartland for years had been an ardent ornithologist, as well as a general naturalist. His knowledge of Australian birds was extensive, and he was one of the first to breed quail in captivity. He was selected to accompany Professor Baldwin Spencer on the Horn Expedition to Central Australia in 1894. Although assisting in the general zoology, Mr. Keartland paid most attention to bird life, and his field notes are fully recorded in Vol. II of the Report. He collected the rare Princess of Wales' parakeet; discovered a new honeyeater, *Ptilotis Keartlandi*, and a plant, *Gardenia Keartlandi*, both named after him. Mr. Keartland was also a member of the tragic Calvert Expedition to North-West Australia in 1896-7. The party consisted of five white men and two Afghans, with 20 camels. Two members died of thirst and their bodies were not found until seven months later. An appreciation of Mr. Keartland, with portrait, appears in the *Naturalist* for June, 1926.

The Plant Names Committee presented its first report. Mr. Charles Walter, a well-known botanist, whose name is preserved in *Prostanthera Walteri*, passed away. Wilson's Promontory was made a permanent reservation as a result of the efforts of the Club. The proposal to build the Melbourne Hospital on fifteen acres of the Domain was successfully opposed. The death of Dr. A. W. Howitt, an honorary member, was recorded. Dr. Howitt was the son of William and Mary Howitt, and was brought to Australia by his father in 1852, the object of the visit being to see Dr. Godfrey Howitt, the brother of William. Alfred Howitt settled in Victoria, and here became a capable and fearless bushman. He explored Gippsland, and was greatly interested in its

Eucalypts. Later he was appointed leader of an expedition to search for Burke and Wills. He rescued the sole survivor, King, and brought him back to Melbourne. He was, in succession, Police Magistrate and Warden of the Gold Fields, Secretary for Mines, and Audit Commissioner. His writings and books on the Aborigines will always be considered of the greatest importance. He was a D.Sc., and the C.M.G. and many other honours were accorded him.

1908-9.—Mr. Keartland remained President, with Mr. F. G. A. Barnard as Secretary. His Excellency the Governor, Sir Thomas Gilson Carmichael, an enthusiastic entomologist, showed much interest in the Club. A further report on the Promontory—a Biological Survey—was issued in the *Naturalist* of February, 1909, and an important paper by Mr. J. H. Maiden, on "Records of Victorian Botanists," appeared in the number for November, 1908.

1909-10.—Professor A. J. Ewart became President. Professor Ewart came from England with a notable reputation as botanist and plant physiologist. He succeeded Mr. Luehmann as Government Botanist in 1906, holding that office until 1920, and was Professor of Botany at the Melbourne University. He wrote much on his subject, and, more particularly in its physiological relations, his work was widely esteemed. His last work was the *Flora of Victoria*. Dr. J. J. Halley, a former President died this year. Mr. F. Pitcher contributed an article on the "Victorian Vegetation in the Melbourne Botanic Gardens."

Miss Janet Raff, B.Sc., joined the Club.

1910-11.—Mr. Frank Wisewould, one of the original members, became President with Mr. A. D. Hardy as Secretary. Mr. Wisewould was a member of the legal profession, a leading naturalist and an excellent speaker. He did not specialize but was keenly interested in all branches of natural history. The *Naturalist* was considerably increased in size this year and more illustrations were provided. Mr. O. A. Sayce, who had been appointed the first Director of the Bacteriological Institute of South Australia in April, 1911, died of pneumonia in the same month. An additional biological report of Wilson's Promontory was issued in January and February, 1911.

1911-12.—The same officers guided the Club. Much opposition was shown to the proposition to abolish the office of Government Botanist. Mr. Charles French, Senr., Government Entomologist, retired from office. The first report of the Plant Names Committee is published in the *Journal of Agriculture* for June, 1911. In the May *Naturalist*, Dr. C. S. Sutton published his paper on the Sandringham Flora. Mr. A. G. Campbell published a list of Grampian plants.

1912-13.—Dr. J. A. Leach became President, with Mr. J. T. Hamilton as Secretary. Dr. Leach was a school teacher, who

Plate II



C. French.



F. G. A. Barnard.

graduated in Science at the Melbourne University. He became a School Inspector, and subsequently Chief Inspector of Nature Study in State Schools, and, as a result, the study of Natural History received a great impetus. Later, Mr. Leach obtained the degree of D.Sc. Dr. Leach encouraged and organized many excursions and camp-outs. Beginning with a lecture on Australian birds at a meeting of the Club, he was encouraged to write his *Bird Book*. Later, he published a large nature study book for the use of teachers. The "Leach Memorial Club," for the study of birds, commemorates his work.

The second Club excursion to Wilson's Promontory was held in December, 1913. Dr. Sutton contributed a supplementary paper on the Sandringham Flora; Mr. J. A. Kershaw described, with photographs, the breeding of the Platypus; and Mr. H. W. Davey, the breeding of English Newts in Victoria.

1913-14.—Dr. Leach was again elected President, but finding departmental duties too pressing, he was compelled to resign, and Mr. J. A. Kershaw was elected in his place. Mr. Kershaw came from a well-known naturalist family, and his especial bent was entomology. From Acting Director, he became Director of the National Museum of Victoria, a position which he occupied for many years. Under his Directorship, the Museum was advanced in every way; and the collections, particularly those of Ethnology and Anthropology, were largely added to. Mr. Kershaw never gave up his interest in entomology, and is still an authority on that subject. Mr. J. R. Tovey became Secretary. An excursion was made to the Werribee Gorge on Cup Day, November 4, 1913, and was memorable on account of a fall of snow during the afternoon.

Mr. Pitcher wrote on Victorian Ferns; Mr. Keartland told of his expedition to North-West Australia; Mr. D'Alton gave an account of the plants of the Little Desert, in the Wimmera district; Mr. Hardy, a list of Mallee Plants; and Mr. Bastow described, with a full list, the Victorian Lichens, with illustrations of typical species.

1914-15.—Mr. Kershaw continued President, with Mr. J. G. O'Donoghue as Secretary. An excursion was made to Wilson's Promontory at Christmas. In the *Naturalist*, Mr. Bastow contributed a lengthy and well-illustrated paper on Hepatics; Mr. Chapman recorded the finding of a fossil sheoak fruit.

1915-16.—Dr. C. S. Sutton was elected President. Dr. Sutton has been a keen student of the Australian flora, specializing in the Eucalypts. He has contributed several papers, in particular, ecological studies of the Sandringham Flora, the Flora of the Keilor Plains, and the Flora of the Cradle Mountain in Tasmania.

War activities interfered somewhat with the work of the Club. It was decided to hold a Wild Flower Show at the Melbourne Athenaeum, in aid of the Red Cross Funds. The Show was

opened by the Governor, Sir Arthur Stanley, and a profit of £55 was made. For the first time, an Orchid collection was specially staged by Messrs. C. French, Jr., and E. E. Pescott. During the year a new orchid, *Pterostylis Toveyana*, from Mentone, was described. Messrs. Pescott and French published their first paper on Orchids, and from now onwards, the study of these became considerably increased. Mr. Charles Frost and Dr. T. S. Hall, M.A., died during the year. One of the earlier members, Mr. Charles Frost, F.L.S., was a member of Committee for two years, Vice-President for two years, and Treasurer for three years. He had expert knowledge of Spiders, Snakes and Lizards, wrote much, and took many excellent photographs of them. With Mr. A. H. S. Lucas, he published a paper on the Lizards of Victoria in the *Proceedings of the Royal Society of Victoria*. The same writers described the lizards and snakes of the Horn Expedition to Central Australia. Mr. Frost's sudden death at the age of 62 was a shock to Club members.

1916-17.—Mr. F. Pitcher, one of the original members, became President, with Mr. O'Donoghue as Secretary. Mr. Pitcher graduated in the Melbourne Botanic Gardens under Baron von Mueller, finally becoming Assistant Director under Mr. John Cronin. With a wide knowledge of plants, Mr. Pitcher took a particular interest in Ferns, wrote freely regarding them, and cultivated many in his garden. Mr. Pitcher greatly assisted the late Mr. W. R. Guilfoyle in the laying-out of the landscape work of the Melbourne Botanic Gardens. A biography, with portrait, appears in the *Naturalist* for 1935.

The War Honour Roll appeared in the April *Naturalist*, with a list of twelve members, two daughters of members, and twenty-eight sons of members. Mr. O'Donoghue, a former Secretary, and a writer of many interesting articles in the *Naturalist*, died. The exhibition of October, 1917, brought a profit of £131 for War Service funds.

In the *Naturalist* Dr. Sutton gave an ecological account of the flora of the Keilor Plains.

1917-18.—Mr. Pitcher was again President, with Mr. E. S. Anthony as Secretary. A notable event was an excursion to Belgrave on October 27, at which His Excellency the Governor-General, Sir Ronald Munro Ferguson, who had been elected an honorary member, was present. The Wild Flower Exhibition brought a profit of £212 for the Y.M.C.A. war funds. A children's room was established in the Melbourne National Museum. Mr. R. A. Keble wrote on "Aboriginal Plant Names," Mr. T. S. Hart described the Eucalypts at Creswick and Clunes, and Mr. E. E. Pescott discussed the "Reproduction of Terrestrial Orchids."

1918-19.—Mr. A. D. Hardy, F.L.S., was elected President, with Mr. Anthony as Secretary. Mr. Hardy was a draughtsman and

a senior officer of the Forests Department. He was an authority on Eucalypts, wrote extensively in the *Naturalist* and other journals on them, and on many other plants. His special study was the Algae, of which he is still an authority. An increase in membership was reported. The third Wild Flower Exhibition yielded a profit of £141 for the Y.M.C.A. war funds. A presentation of a pocket aneroid was made to Mr. F. G. A. Barnard in recognition of his service as honorary Editor of the *Naturalist*. Mr. George Coghill retired from the Treasurership after fifteen years' service, and a presentation was made him in recognition of his work.

Mr. A. D. Hardy recorded the giant gum trees of Victoria; Professor Spencer wrote on Kitchen Middens; Mr. F. Chapman, of the Geological History of Australian Plants, and Mr. Joseph Gabriel directed attention to the destruction of Mutton Birds and Penguins at Phillip Island.

During the years 1917-19, Mr. A. B. Braine, a schoolmaster at Cravensville, in the north-east of Victoria, published an interesting series of articles in the Chiltern newspaper on the orchids of his locality. He discovered one species new to science, *Chiloglottis Pescottiana*, and four other species new for Victoria. The following joined the Club: Miss R. S. Chisholm, and Messrs. P. Crosbie Morrison and Thomas Dunbabin.

Owing to the influenza epidemic, a proclamation was issued forbidding the holding of gatherings in public buildings, and the meeting appointed for February 10, 1919, was abandoned.

1919-20.—Mr. A. D. Hardy was again President. Mr. P. Crosbie Morrison was elected Secretary, but was compelled to resign, Mr. E. E. Pescott filling the gap until the end of the year. The Club now had 246 members and a credit balance at the end of the year of £92. The first life member, Mr. B. R. Patey, died this year. Edwards Park at Preston was proclaimed a sanctuary for birds. The Wild Flower Exhibition yielded a profit of £167, which was divided equally between the Anzac House Funds and a fund for publishing the list of vernacular plant names. Professor Spencer retired from the Chair of Biology at the Melbourne University. A printers' strike in March and April temporarily affected the issue of the *Naturalist*. In the *Naturalist* Mr. A. H. S. Lucas wrote on Seaweeds and on growing Ferns; and Mr. G. Weindorfer, on Wild Life in Tasmania. Messrs. W. H. Ingram and A. J. Tadgell joined the Club.

Retrospect of the Second Twenty Years

This rounds off the work of the second twenty years; and it was undeniable that the Club had shown a magnificent record of work. In 1920 Mr. F. G. A. Barnard said: "Whether the Club has accomplished what was intended by its promoters is perhaps

a matter of opinion. In my opinion it has." And there can be no doubt that Mr. Barnard was right. Here is the result: Papers read, 917; volumes of the *Naturalist* published, 36, containing 8,452 pages, at a cost of £3,195. The total receipts for the forty years was £5,675; and the expenditure, £5,583. The sum of £79 was spent on bookcases, and much money to furnish the Library. Further, the sum of £622/8/9 was raised for war funds.

The Third Twenty Years

In this period all the activities of the Club were quickened; the membership steadily increased; the finances were sound; the journal became more popular, and more freely illustrated; much field work was done both near and afar; and the attendances at the meetings increased. In July, 1930, Mr. Barnard gave the third and last of his "retrospects," and like the others, it is freely drawn upon for this period.

1920-21.—At the first meeting, the fortieth anniversary of the Club was celebrated by a special re-union, at which seven of the eight "original" members still living—Messrs. C. French, W. M. Bale, F. G. A. Barnard, D. Best, F. Pitcher, J. E. Dixon and F. Wisewould—were present, Mr. T. G. Sloane of Young being the only absentee. A presentation was made to Mr. G. Coghill in recognition of his services as Treasurer for fifteen years. Mr. Joseph Gabriel was elected President. Mr. Gabriel was a pharmaceutical chemist, with marine life, and especially seaweeds and polyzoas, for his hobby. He was indefatigable in his work for the Club, and made it many useful presentations. Mr. R. W. Armitage became Secretary. There were 259 members. The death occurred of Mr. R. A. Bastow, a prominent worker among Lichens. Four meetings had to be abandoned owing to industrial troubles. The Wild Flower Show yielded a profit of £66, which was set aside towards the publication of the *Census of Victorian Plants*.

1921-2.—The President for the year was Mr. F. Chapman, A.L.S., with Mr. C. Oke as Secretary. Mr. Chapman is a Palæontologist of wide repute, and served in that capacity at the Melbourne National Museum. He wrote voluminously on his subject, and published several books on natural history. This year the Club showed a credit balance of £219. The October meeting commemorated the twenty-fifth anniversary of the death of Baron Sir F. von Mueller. The annual Exhibition of Wild Flowers added £150 to the Club funds; and a joint nature study display with the Microscopical Society, in June, added a further £23. Mr. A. H. S. Lucas was made an honorary member. In the *Naturalist* Mr. A. J. Tadgell recorded a new list of alpine plants, and Mr. Chapman wrote on the Geology of the Mallee. The death occurred of Mr. J. F. Mulder, of Geelong, at the age of 81 years.

1922-3.—Mr. Charles Daley, B.A., F.L.S., was elected President,

with Mr. C. Oke as Secretary. Mr. Daley was a school teacher who was versed in many branches of natural history, and contributed many articles to the *Naturalist*, his *History of the Flora Australiensis* being most notable. As an historian he has also written extensively for the *Victorian Historical Magazine*, one of his most valuable contributions being "The Life of Baron von Mueller." The membership now surmounted 300, and the funds still increased. A Nature Study Exhibition was held in winter in the Melbourne Athenaeum, and the annual Wild Flower Exhibition in the Melbourne Town Hall in spring, yielding a profit of £150 for the Club and the Children's Hospital. Mrs. Edith Coleman contributed her first article on Orchids. In February, all the remaining "original" members were made "honorary life members." The Club suffered losses by the death of Mr. Wm. Stickland, an enthusiastic worker and student of pond life; Mr. J. R. Tovey, assistant at the National Herbarium; Mr. F. P. Spry, entomologist to the National Museum, a co-author, with Mr. Anderson, of the *Butterflies of Victoria* (a portrait and biography appears in the *Naturalist* for September, 1922); and Mr. Joseph Gabriel, a past President, and a noted worker in Conchology and Algae.

1923-4.—The same officers guided the Club. The membership still increased. During the past seven years £640 had been given to war, or charitable, funds, and £338 divided between Club funds, and the cost of printing the *Census of Victorian Plants*, which was published in time for the spring Wild Flower Show. The *Naturalist* had increased in size, and was well illustrated. Charles Barrett contributed bird notes; Reginald Kelly wrote on Thrips; E. J. Dunn, on the Bunyip; T. S. Hart, on the flora about Bairnsdale; Dr. Sutton, on the flora of Cradle Mountain in Tasmania; S. Butler, about Spiders; D. J. Paton told of the plants of the Whipstick; and E. E. Pescott contributed his second "Notes on Victorian Orchids." Miss Jean Galbraith joined the Club. The death in September of Dudley Le Souëf, Director of the Melbourne Zoological Gardens, was the result of a murderous attack by footpads. Mr. Le Souëf was a member for more than forty years, and a voluminous writer in the *Naturalist* and the *Emu*; he was interested in ethnology as well as zoology, and in many ways advanced the knowledge of these sciences. An appreciation of him appears in the *Naturalist* for October, 1923.

1924-5.—Mr. J. Searle became President. Because of an article written by him, "Gleanings of a City Naturalist," Mr. Searle is often called "Our City Naturalist." He is a notable microscopist and a leading authority on pond life. An excellent portrait appears in the *Naturalist* for February, 1935. Mr. A. J. Tadgell listed the flora of Mt. Bogong. Deaths were recorded of Mr. G. R. Hill, one of the oldest members of the Club, and

of Mr. Leonard Thorn, a capable and earnest entomologist, specializing in the study of butterflies and moths. Mr. F. G. A. Barnard reluctantly relinquished his office as Editor and, at the unanimous request of the members, Mr. Charles Barrett, C.M.Z.S., accepted the position.

1925-6.—Mr. George Coghill became President. He was elected a member in July, 1882. Coming to Melbourne from the country, he retained his love for nature and the bush. He had been an ardent and generous collector, and although not contributing greatly to the journal, had given much of his time to Club affairs—as Committee-man, Treasurer, Secretary and Vice-President. For many years he allowed the Committee the free use of his business office for its meetings. The June *Naturalist* contained, in "A Record of Service," a full account of the work of Mr. F. G. A. Barnard, with an excellent portrait; and a presentation was made to him at the meeting. The death occurred in Sydney of Mr. J. H. Maiden, I.S.O., F.L.S., Government Botanist of New South Wales.

1926-7.—Mr. E. E. Pescott became President, with Mr. L. L. Hodgson as Secretary. Mr. Pescott was an officer of the Department of Agriculture, who had been for years Principal of the School of Horticulture at Burnley. He was a horticulturist and botanist, with special leanings towards acacias and orchids. He also specialized in ethnology. At the first meeting the President announced that in future all meetings would be held in the upstairs hall. The Wild Flower Show in spring yielded a profit of £125, of which £25 was handed to the Children's Hospital. Long excursions were held at the Mitchell Gorge, Bairnsdale, the Hopkins River, Killara, and Toolangi. Papers by Mr. J. Clark on Victorian Ants; Mr. E. E. Pescott, on Victorian Orchids; Mr. H. B. Williamson, on Victorian Ferns; Mr. J. A. Kershaw, on the Reptiles of Victoria; and Mr. P. F. Morris, on the Grasses of the Melbourne District, were most notable. Two former Presidents passed away—Mr. G. A. Keartland and Mr. F. Wisewould. The *Naturalist* for this year was the largest issued.

1927-8.—Mr. E. E. Pescott was again President, with Mr. L. L. Hodgson as Secretary. The Club had a record number of 374 members. Sperm Whale Head was gazetted as a National Park. The late Donald MacDonald, having directed attention in the *Argus* to the disappearing tea tree around Port Phillip Bay, an investigation was made and a report furnished. Mr. V. Miller presented a typewriter, and a copy of the *Australian Encyclopaedia* to the Club. Mr. V. Miller was elected an Hon. Life Member. In deference to the wishes of many of the members it was decided to adopt the Red Correa for the Club's badge instead of the Nassa shell. Sealer's Cove, Phillip Island and Forrest were the localities of long excursions. The State Government appointed an Advisory

Council for Fauna and Flora with Dr. J. A. Leach as Chairman. At the suggestion of Mr. Donald MacDonald, Mr. Wm. Lawford, of Linton, near Benalla, a naturalist, presented the Club with a set, in twelve morocco-bound volumes, of Gregory Mathews' *Birds of Australia*. Mr. Lawford was subsequently elected a Life Member. Mr. V. H. Miller later presented the Club with a cabinet, specially made to carry the volumes. Mrs. Coleman began her series of articles on Orchid Pollination; Mr. Tarleton Rayment wrote on Native Bees; Mr. C. Daley, on the *History of the Flora Australiensis*; Mr. H. B. Williamson, on the *Club Mosses of Victoria*, and on the *Aquatic Plants of Victoria*. Through the medium of Mr. (later Senator) R. D. Elliott, the sum of £200 was presented to the Club by an anonymous donor for the purpose of making further researches into the fauna and flora of the State. In October, 1927, an expedition, the cost being defrayed from this fund, was conducted through the Western District of Victoria.

1928-9.—Mr. F. Erasmus Wilson, F.E.S., was elected President. Mr. Hodgson was again Secretary, but was compelled to resign on account of ill health, and Mr. A. E. Rodda took his place. The new President is a well-known entomologist. A new edition of the Plant Census was completed by Mr. H. B. Williamson. Senator R. D. Elliott was made an Honorary Life Member. Mr. Dudley Best, one of the founders of the Club, and its first Secretary, died suddenly in June at the age of 84 years. Mr. Best, by his will, left the sum of £50 to the Club, and the amount was set aside for investment, the interest to be used for library purposes. The June meeting received the report—issued as a special supplement to the October issue of the journal—of the Western District expedition. The party consisted of Messrs. E. E. Pescott, C. Daley, H. B. Williamson, C. Barrett and V. H. Miller. Congratulations were sent to an absent member, Sir Albert E. Kitson, K.B.E., Director of the Geological Survey of the Gold Coast, Africa, on his election as President of the Geological Section of the British Association for the Advancement of Science. A presentation was made to the Hon. Treasurer (Mr. A. G. Hooke) on his approaching marriage. Mr. Williamson wrote on the Lilies of Victoria.

1929-30.—Mr. P. R. H. St. John became President. The new President was Classifier and Herbarian Assistant at the Melbourne Botanic Gardens, and an outstanding authority on the Eucalypts. Sir Baldwin Spencer was made an Honorary Life Member, but did not live to learn of the honour, for his death in Patagonia was announced at the August meeting. The death was recorded of Dr. J. A. Leach, and of Mr. A. J. Campbell, an early member, and founder of the Wattle Day League, who was a distinguished ornithologist and the author of standard works

on the *Oology of Australian Birds*, and the *Nests and Eggs of Australian Birds*. Mr. Nicholls and Mrs. Coleman wrote extensively on Orchids; Mr. Williamson, on Acacia and Cassia; Mr. Hornshaw, on Aboriginal Art; Mr. D. Fleay, on the Brush-tailed Phascogale; Mr. N. Ward, on Shore Crabs; and Miss Underwood, on Sea Slugs.

It is here that Mr. Barnard's chronicle ended. It was a great piece of work as a record of achievement—and while the Club was waiting to celebrate its Jubilee, he mentioned that the receipts for the fifty years were £11,185, and the expenditure £10,540; that the sum of £621 had been given to War Funds, and £281 to charities. 556 numbers of the *Naturalist* were issued, and about 1,150 papers read to the Club. He says finally, "That the Club has filled a place in the scientific and social activities of the State cannot be overlooked. Long may the Club continue . . . to keep a watchful eye on those who desire too eagerly to exploit our flora and fauna for purposes of gain."

1930-31.—Mr. Charles Barrett, C.M.Z.S., was President, and Mr. Rodda still Secretary. Charles Barrett is a journalist, and as a naturalist contributed articles in the various branches of Natural History to one or other of the newspapers of the *Herald Company*. He was the author of the *Sun* and *Herald* Nature Books, the issue of which ran into several hundred thousand. He published several works privately, the last of which, *Koonwarra*, is more or less a biography of travel. Charles Barrett has ventured several times across and around Australia, and as a naturalist is known throughout the Commonwealth and abroad. His private hobby is gardening, with a leaning towards Orchids, Ferns and Succulents. The Club celebrated its Jubilee by holding a dinner, attended by representatives of kindred societies; and a Natural History exhibition at the St. Kilda Town Hall in aid of the Lord Mayor's Hospital Appeal, which resulted in a profit of £380. The Club gave its assistance to other bodies in the matter of the promotion of a Wild Flower Protection Bill, which has now become law, and will shortly be enforced. At the January meeting it was decided that future shows should include all branches of Natural History. Mr. Hardy recorded that the tallest living Australian Eucalypt, a Mountain Ash, *E. regnans*, 303 feet in height, is growing in the Cumberland River district. In February, the death occurred, after a few hours' illness, of Mr. H. B. Williamson, in his seventieth year. A teacher by profession, Mr. Williamson was one of the most active workers in the Club. Wherever he went he endeavoured to interest his scholars and their parents in Natural History, and many field workers of to-day are indebted to him. He was a systematic botanist, and an able botanic artist, and his articles on Ferns, Lilies, Mosses, the *Pultenæas*, Aquatic Plants, and other plants will long keep the

Plate III



Charles French.



George Coghill.

memory of him alive. To him the Club largely owes the *Census of Victorian Plants*, both editions of which he edited for publication; and it is due to him that hundreds of lost sheets of this work were rescued, with the result that the second edition was issued with small cost to the Club. A full appreciation with an excellent portrait appears in the *Naturalist* for March, 1931. The journal is full of valuable articles, especially those by H. B. Williamson and W. H. Nicholls. Mr. F. Lewis writes on "The Future of our Fauna," and the Editor, on the Giant Earthworm and the Gippsland Water Lizard. Messrs. Ivo Hammet and A. S. Chalk joined the Club.

1931-2.—Mr. J. A. Kershaw, F.E.S., again became President, with Mr. A. E. Rodda as Secretary. Mr. Kershaw had retired from the Directorship of the National Museum, the Club in this way paying him a well deserved compliment. The Wild Flower and Native Plant Protection Act had come into force, and several members of the Club were appointed Honorary Rangers. Mr. Charles Daley wrote on "Fifty Years of Science," and Mr. Charles Barrett on "The Club To-Day," both papers having reference to the Jubilee. Professor A. J. Ewart published *The Flora of Victoria*. Mr. Charles Daley was the author of an illustrated booklet on the Grampians. Supplement No. 4 of the *Plant Census* was issued. Mr. A. J. Swaby became Secretary. Over 5,000 people visited the Spring Wild Nature Exhibition. Mr. Alex. H. Chisholm published *Nature Fantasy in Australia*. Mr. L. L. Hodgson, a former Secretary, died; the late Secretary, Mr. A. E. Rodda, passed away; and also an old member, an expert bird observer and entomologist, Mr. J. A. Hill, of Stawell. Messrs. W. H. Nicholls, D. Fleay, E. E. Pescott, S. R. Mitchell, C. Daley, Tarleton Rayment, J. A. Kershaw, F. E. Wilson and Mrs. E. Coleman, all wrote on their respective subjects. Mr. A. H. S. Lucas described a section of Victorian Seaweeds. Mr. F. S. Colliver joined the Club.

1932-3.—Mr. J. A. Kershaw remained President, and Mr. A. J. Swaby, Secretary. There were now 373 members, and the finances were excellent. The Wild Nature Exhibition in the St. Kilda Town Hall was a success. The Shell Company brought flowers from every part of the Commonwealth, some by 'plane. The exhibits from the gardens of Messrs. N. Burdett and E. Ashby, of South Australia, were greatly admired. Mr. D. Fleay's exhibit of living marsupials was a notable feature. The microscope section was well organized. The *Naturalist*, for the first time, illustrated articles on Crinoline Fungi, Coral Fungi, the Lesser Flying Phalanger, Sea Slugs and Spiders with five coloured plates. Mr. Nicholls and Mrs. Coleman wrote on Orchids, and the volume contained no fewer than eighteen papers on them. Mr. D. Fleay wrote on Native Cats, the Pigmy 'Possum, the Bush Mouse, and

the Lesser Flying Phalanger; Mr. Sainsbury, on Australian Mosses; Mr. Albiston, on Hepatics; the Plant Names Committee, on Alien Plants; Mr. Whitley, on Sunfishes; Miss Joyce Allen, on the Octopus; and there was a special issue on Spiders, well illustrated by Mr. S. Butler. The death occurred of Mr. A. M. Lea, of the South Australian Museum, the "greatest of Australian-born entomologists." In his work he described 5,432 species of insects, leaving descriptions of 221 species still to be published. Other losses were Mr. Gustav Weindorfer, a well-known member and botanist of "Waldheim," at the Cradle Mountain, Tasmania; Mr. F. G. A. Barnard; Mr. T. G. Sloane, an original member, and a well-known entomologist; and Mr. James Hill, a bush naturalist, of Murtoa. During the year Mr. Swaby resigned from the Secretaryship, and Mr. F. S. Colliver was elected in his place.

1933-4.—Mr. V. H. Miller was elected President, with Mr. F. S. Colliver as Secretary. Mr. Miller is a keen lover of Australian plants, and a worker for the preservation of all forms of Australian fauna and flora. He is well-known for his liberal donations to the Club. The membership was 374, and the finances sound. Volume fifty of the *Naturalist* was published. Four issues were notable; November, with articles on the Helmeted Honeyeater; February, with articles on the Thelymitra Orchids; April, with one on Fungi; and the January issue, on the Mallee Fowl—the first three with coloured plates. The April issue dealt exclusively with Fungi, by Mr. Howie, with two coloured plates, and many other illustrations. A large number of copies of this issue was purchased by the Teachers' Training College. The volume is full of interesting articles on Orchids, Marsupials, Entomologic, Geologic and other subjects. The Wild Nature Show at the St. Kilda Town Hall was splendidly staged, and well attended. The death occurred of Mr. Charles French, a biography and portrait appearing in the July number. Mr. Donald MacDonald, the great naturalist writer of the *Argus*, also died. A memorial at Black Rock commemorates his life and work.

1934-5.—Mr. A. S. Kenyon, M.I.E. (Aust.), became President. Mr. Kenyon is an engineer with many distinctions. As a Commissioner of the State Rivers and Water Supply the Mallee was his special care, and he became the leading authority on that district, with a full knowledge of its natural history. Mr. Kenyon is also an authority on the Australian aborigine; is a well-known historian, and as Honorary Numismatist is now at the National Museum. The Wild Nature Show was held in the Melbourne Town Hall for three days. The displays were remarkable, but the public did not respond very generously. *Victorian Ferns*, by Mr. R. W. Bond and Mr. Charles Barrett, was published by the Club. Articles in the *Naturalist* included one on Monotremes, with special reference to the Platypus; and another on the Koala; while

Geasters, Grasses, Cuckoos, Sharks, Spring Tails (with coloured plate), were dealt with. Messrs. J. Searle, G. Coghill, C. French and J. Stickland were elected Honorary Life Members. Mr. C. French retired from the position of Government Biologist. Dr. McGillivray, of Broken Hill, and Mr. F. R. Beuhne, died. Books published during the year included, *Native Trees of Australia*, by J. W. Audas; *Bird Wonders of Australia*, by A. H. Chisholm; and a *Key to the Eucalypts*, by W. F. Blakely. An epidiascope was acquired at a cost of about £71, and its use has been much appreciated both by lecturers and audiences.

1935-6.—Mr. G. N. Hyam was President. Mr. Hyam is an all-round naturalist, with a special study of native plants and their cultivation. He is an officer of the Department of Agriculture. The membership numbered 361. The Club arranged for the erection of a fence to protect the aboriginal paintings at Langi Logan and in the Victoria Ranges. The grave of Baron von Mueller was put in order, and a plaque of him had been placed in the National Herbarium. Among articles in the *Naturalist* were Mrs. Coleman's on Pollination; the Flora of Kinglake; the Leaf Curling Spider; Mr. Whitley's, on Whitebait; on Tommy McCrae, the Aboriginal Artist; Mr. Fleay's, on Breeding Tasmanian Devils; on Plant Life in the Goulburn Valley; Fungi of Sherbrooke Forest; the Pink Salt Lakes of the Mallee; and several on Orchids. Another of the "original" members, and a Past President, Mr. Frederick Pitcher, passed away in November at the age of 79 years; and Mr. J. H. Gatliff, the "father" of Australian conchologists, an early contributor to the *Naturalist*, also died in September at the age of 87 years.

1936-7.—This year Mr. S. R. Mitchell became President. As a boy, Mr. Mitchell gained a Club prize for Natural History work. He is an expert mineralogist and metallurgist, and frequently exhibits specimens. He is also a keen collector of ethnological material. The membership was smaller. Our flora, as usual, occupied a prominent place in the *Naturalist*, with plant lists of Torquay, and the Little Desert. The work of the late Mr. Howie was described by Mr. Charles Barrett. Two new Mistletoes were recorded for Victoria; Lyre Birds described; additions to the *Flora of Victoria* given; Dr. Francis Lloyd, of America, wrote on the *Utricularias*; and Mr. Colliver, on the fossil localities around Melbourne. The death was announced of Mr. John Stickland, one of the Club pioneers, and a worker on Pond Life. An appreciation, with portrait, appeared in the March issue. Professor A. H. Lucas, an "original" member, the first editor, a former President, and an authority on Seaweeds, also died in June, at the age of 83 years. The Annual Exhibition at the St. Kilda Town Hall was noted for the fine collection of flowers from all the States, the Shell exhibit being particularly good.

1937-8.—This year Mr. A. H. Chisholm, C.F.A.O.U., became President. After holding journalistic positions in Victoria, Mr. Chisholm went to Brisbane and then to Sydney, where he was engaged on the staffs of newspapers in those cities. He returned to Melbourne to continue the Natural History work on the *Argus* and *Australasian* that had been done by the late Donald MacDonald, and joined the Club. He has been editor of the *Emu*, President of the Queensland Field Naturalists' Club, and the Gould League of Bird Lovers, and Chairman of the Ornithologists' Union of N.S.W. He was also a trustee of the N.S.W. National Park. Mr. Chisholm's books are, *Bird Seeking in Queensland*, *Mateship with Birds*, *Feathered Minstrels of Australia*, *Birds and Green Places*, and *Nature Fantasy in Australia*. While President, he became Editor of the *Australasian* and later of the *Argus*. He resigned from the latter position to go to England for a year. While there, after much search, he collected a large number of Gould letters and other material, as well as the lost Gilbert diary. He has subsequently written much on these discoveries and is preparing a book for publication on Gould and Gilbert. During the year, the Club saw the realization of its efforts in the extension of the areas of the Sanctuaries at Mallacoota, Wyperfeld, and Cumberland, while an area on the Dead Cock Creek, near Bairnsdale, was also proclaimed. No exhibition was held this year, owing to an epidemic of influenza. The *Naturalist* had many interesting articles, notably those on Fossils around Melbourne, and Melbourne Building Stones, and one on Aboriginal Ceremonial Ground, near Streatham. There was no open season for wild duck this year. The following deaths occurred: Professor Ewart; Mr. Lambert, an old member; Mr. W. Champion Hackett, of South Australia; Mr. E. J. Dunn, former Government Geologist (for biography and portrait see the *Naturalist* for June, 1937); Sir Albert Kitson, of Nigeria, an old member (for biography and portrait see the *Naturalist* for May, 1937); the Rev. James Wilson, a well-known botanist and father of a former President, Mr. F. Erasmus Wilson; and Miss Rosa Fiveash, the well-known botanical artist of South Australia.

1938-9.—Mr. R. H. Croll was elected President. Mr. Croll has been President of the Melbourne Walking Club, was assistant Editor of the *Emu*, and a recognized art authority. As a poet, he published several volumes of poetry, and also *The Open Road*, and *The Ways of Many Waters*. He is a frequent contributor to papers and journals. In 1929 he accompanied Professor Stanley Porteous of Hawaii, an ex-Victorian, to Central Australia where the Professor made a study of the psychology of the Australian aboriginal and subsequently he made further visits to the Centre, his book, *Wide Horizons*, being the outcome of these journeys. His latest book, a biography, *I Recall*, has been very favourably

received. The Wild Nature Show was quite up to the usual standard, but only a small profit was made. A slight increase in membership occurred. The Club was invited to convene a meeting of kindred bodies to discuss the advisability of making an annual award of a medal to the one who had done the most outstanding work in Natural History. The October number of the journal was devoted to papers on John Gould, whose Centenary was celebrated. Mr. Zimmer published a book on the Flora of the North-West of Victoria, and in the *Naturalist* wrote on the Grasses of the North-West. A list of East Gippsland Orchids was given. Mr. Littlejohn wrote on the Bush by night; and Mr. Hart, on Victorian Mistle-toes. A fossil whale, discovered at Torquay, was found to be of a new genus, and was named after our energetic Secretary, *Mammaladon Colliveri*. The Club purchased a small piece of ground in the St. Kilda Cemetery adjacent to the grave of Baron von Mueller, to provide further space for planting additional shrubs. This planting was carried out in July, mainly with the aid of Mr. H. C. Stewart. The excellent wild flower photographs by Mr. H. T. Reeves attracted considerable attention, one of them being the rare *Prostanthera Walteri*. During the year the death of Tom Tregellas, a great bird man and photographer occurred. An appreciation and portrait appeared in the January issue. Mr. J. F. Bailey, recently Director of the Adelaide Botanic Gardens, died. *Victorian Sea Shells*, by Charles Gabriel, was published by the Club. Mr. Gabriel has long been a member. He is a son of a Past President and exhibits from his extensive shell collection are always admired.

1939-40.—Mr. A. S. Chalk became President. He is a keen ornithologist, and an active member of the Bird Observers' Club, of which he has been President. After holding the office of Editor for twelve years, Mr. Charles Barrett resigned, in order that he and Mrs. Barrett might travel in Australia and abroad; and Mr. A. H. Chisholm was appointed in his place. In the *Naturalist*, Mr. T. S. Hart discussed the Yellow Box in its relation to the "Sandringham" area; Mr. French announced the introduction of a new pest, the Cabbage Butterfly, from New Zealand; Mr. James Browne, of Canada, told of his early experiences with the West Australian Aborigines; Mr. Chisholm wrote on the "Anting" of birds; Mr. Fleay, on the breeding of the Tiger Cat; and Mr. Zimmer, on Plant Invasions in the Mallee. The March number contained a full report of an excursion to Mount Buffalo, with an illustration of a remarkable "find" there of aboriginal implements. An orchidologist new to the Club, J. Ros Garnet, described a new Orchid. The July issue contained a much-needed index to the Fern Book. Mr. Chisholm contributed two articles on Gould and his wife. In August, Mr. Dixon, one of the small band of young men who met in Mr. Charles French's residence in the

late 'seventies, and assisted to found the Club, passed away. Until infirmity prevented him, he was a regular attendant at the meetings. He was an exceptionally keen entomologist, and many insects, and a very rare and probably extinct orchid, *Prasophyllum Dixoni*, were named after him. The death was announced of Mr. George Gossip, a prominent naturalist, and President of the Ararat Naturalists' Club. He was largely responsible for the founding of the Wild Nature Park at Ararat, and a memorial to him was unveiled there in September, many of our Club members being present.

It would not be right to conclude this record without referring to some of the present workers. Mr. L. W. Cooper, Vice-President, has been assistant Secretary for many years, and has rendered faithful service. Dr. C. S. Sutton has for many years had charge of the Library; Mr. J. Ingram, assisted by his brother, Mr. W. Ingram, who is also assistant-Librarian, fills the office of Treasurer; and Mr. F. S. Colliver has, for seven years, acted as Honorary Secretary.

The Editors

The Club has indeed been fortunate that in the long sixty years of its existence its Journal has had need of only four Editors. It has been said that the Club could not exist without the *Naturalist*. Whether that is likely or not, it can surely be said that it owes much of its great success to these four.

It has been my privilege to know them all. Of Professor Lucas I cannot speak with as much knowledge as of the others, but obviously he was a highly educated man, a gifted scientist, and a real naturalist. Of Mr. Barnard, one can say that he was a natural-born Editor, in love with his job, with the interests of the Club always uppermost in his mind. In Mr. Barrett and in Mr. Chisholm the Club has been fortunate in having two accomplished journalists, both naturalists in the truest sense of the word, and both, perhaps, more capable than were the others of creating a public interest in Nature.

The Records End

So ends the work of the chronicler. It has not been possible to mention more than some of the important papers in the Journal, whose volumes are mines of information for naturalists generally. Not all of our members can hope to possess a full set of these volumes, but they are always available in our Library, and future workers, by reference to them, might well acquaint themselves with what work has already been done in the branches of Natural History they have chosen for study, so that still fields virgin can be explored, and repetition avoided.

The Future

The Field Naturalists' Club of Victoria is the oldest of its kind in the Commonwealth. In its sixty years of existence it has published fifty-six volumes of *The Victorian Naturalist*, month by month, practically without a break; it has produced two editions of *A Census of the Plants of Victoria* with their vernacular names; *Victorian Ferns*, and *Victorian Sea Shells*, all without expectation of any pecuniary profit. Its efforts have resulted in the reservation of many thousands of acres for reserves and national parks; in the protection and preservation of our fauna and flora; in the education of many young people in Natural History; and in the creation of a sentiment for natural things in people generally.

Many kindred bodies like the Royal Australian Ornithologists' Union, the Bird Observers' Club, the Entomologists' Society, the Microscopical Society, and others have come into existence since the birth of this Club, and this has naturally affected its membership; but the field of Nature is wide, and there is room for all. Hitherto all have worked in harmony, and doubtless will continue to do so.

Our Club has been fortunate in more ways than one: in its founders, so enthusiastic and purposeful: in that so many of our leading scientists have hitherto not only not disdained to become members, but have taken an active part in Club affairs: and in the Editors of its Journal which has an excellent reputation both here and in countries overseas.

Considering its past one can have no doubt of the success of the Club in the future. It is now so firmly established, its financial condition so satisfactory, its active members so numerous, that even greater achievements may be expected of it.

The reproduction of the Showy Isotome, *Isotoma axillaris*, is interesting. The plant will grow readily from cuttings, and seed germinates quite freely, the seedlings flowering in their first year. Some time ago I placed a handful of cuttings in water, cuttings taken from wild plants, which were in full flower. These pieces kept on flowering, and after about three weeks they commenced to make root while still in the water. In two or three weeks more, the pieces had a strong enough root system to allow them to be planted out in the rock garden. While still in the water the early flowers developed seed heads, and the seed therein ripened. On being sown, the seed germinated and quite a large number of seedlings were the result.

E.E.P.

A TRIBUTE TO WILLIAM BURDETT

By F. E. BARRETT

He was more than a great horticulturist; he loved Australian plants, and no one has better understood their needs in cultivation than William Burdett. His death, to people in many parts of the Commonwealth, means the loss of a friend whose memory will not fade. He was generous in helping the Field Naturalists' Club of Victoria, sending over from South Australia for our Wild Nature Shows flowers from his garden in the Basket Range. Sometimes he came to Melbourne especially to attend the Show; and maybe was pleased to find his own exhibit outstanding.

Official thanks he received; but appreciated more the comments of visitors admiring the Basket Range blooms, and the friendly words of Club members met in the hall. The Shell exhibit, always magnificent, included Mr. Burdett's flowers. He was content that it should be so; but would not have any mingling of Basket Range flowers with those of other private exhibitors. I learned this, when the mistake was once made, inadvertently. Mr. Burdett was annoyed until the changeover was made, when he became again the genial man who so easily made friends. I saw him *only* a few months before his death, being a welcome visitor to Basket Range and the finest natural garden in Australia. Welcome, because the owner knew that I was a lover of wild flowers, if not learned in botanical lore; and remembered my care to see that flowers from Basket Range received their due at our Wild Nature Shows.

Nowhere in the world perhaps, is there a more wonderful private garden than that planned and made by William Burdett, in the Basket Range. It was a memorable experience, which I have twice enjoyed, to be personally conducted over acres of wilderness and garden art combined by the owner himself. He might seem gruff to a visitor stepping carelessly off the winding bush-track pathways, for only he knew what small and rare plants were in danger of destruction. Photography he did not ban, if only you would be careful not to step upon plants growing close to the ground. But he never would pose for a portrait himself. Of his knowledge concerning native plants, their haunts and their habits, he gave freely to earnest inquirers. He had no time for the merely curious folk, and could be very brusque when he chose. The unforgivable offence was to walk around his garden as if you were rambling in a bush paddock.

He has been called "The Wizard of Basket Range" by an admirer of Luther Burbank; and indeed, he was a wizard with Australian plants, though not a creator of varieties for general cultivation—fruits and other food plants. He delighted in plants as Nature created them. The Basket Range garden is his memorial.

Plate IV



A section of Mr. Burdett's garden.

Field Naturalists' Club of Victoria

OFFICE-BEARERS, 1939-40.

President: Mr. A. S. CHALK, 11 Avenel Road, Kooyong, S.E.4
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Mr. L. W. COOPER.

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Mr. A. H. CHISHOLM, F.R.Z.S., 9 Avenel Rd., Kooyong, S.E.4.
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Mr. F. S. COLLIVER, 14 McCarron Parade, Essendon, W.5.
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Hon. Assistant Secretary:

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Committee:

Messrs. R. H. Croll, Ivo C. Hammet, G. N. Hyam, S. R. Mitchell,
H. T. Reeves and H. C. E. Stewart.

EXCURSIONS

SATURDAY, MAY 11.—Botanic Gardens. Leader: Mr. W. H. Ingram. Subject: Birds and Flowers. Meet at the Office Gate at 2.30 p.m.

SATURDAY, MAY 25.—Geological Museum. Leader: Mr. G. Brown. Subject: Geology and Mineralogy. Meet at the Museum, Gisborne Street, at 2.30 p.m.

MONDAY, JUNE 17 (King's Birthday Holiday).—Sherbrooke Forest. Leaders: Messrs. A. G. Hooke and H. C. E. Stewart. Subject: Lyre-birds and Fungi. Motor transport from 199 Russell Street at 10 a.m. Fare, 4/-, subject to fifteen or more persons booking. Names to be handed to the Secretary not later than June 10.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

VICTORIAN SEA SHELLS, by C. J. Gabriel, describing 150 shells, all to be found in Port Phillip, is abundantly illustrated. Price, 1/6.

A CENSUS OF VICTORIAN PLANTS, by the Plant-names Committee of the Club, contains the vernaculars of all our plants. Price, 3/6.

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FLATTELY & WALTON: *Biology of the Sea-Shore*, 1922, 17/6.

WOMERSLEY: *Primitive Insects of South Australia*, 1939, new, 9/.

SWEET: *Flora Australasica*, 1827-1828, half leather, £15.

MULLER: *The Fertilization of Flowers*, 1883, 25/-.

BOWER: *Botany of the Living Plant*, 1919, 25/-.

FAWCETT: *The Banana*, 1921, 30/-.

THOMSON (ESTELLE): *The Flowers of our Bush*, 1929, new, 1/6.

WEST: *Treatise on the British Freshwater Algae*, 1927, 23/6.

BOWER: *The Ferns*, Vol. 1, 1923 (Cambridge Botanical Handbook), 35/-.

MAW: *The Genus Crocus*, full morocco binding, title-page and appendix missing, £15.

SULMAN: *Wildflowers of N.S.W.*, 2 vols., 14/6.

HANSEN & SORENSEN: *On Two Orders of Arachnida*, 1904, £1.

LOWNE: *The Blowfly*, 2 vols., 1890-95, £2/7/6.

GURNEY: *The Gannett*, 1913, 30/-.

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Vol. LVII, No. 2



JUNE, 1940

THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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1940

Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR ANNUAL MEETING

TUESDAY, JUNE 11, 1940

1. Minutes.
2. Correspondence and Reports.
3. Election of Members.

AS HONORARY MEMBERS.		PROPOSER.	SECONDER.
Mr. C. L. Barrett.		Mr. F. S. Colliver.	Mr. S. R. Mitchell.
Mr. F. Chapman.		"	"
Mr. C. J. Gabriel.		"	"
Mr. W. F. Gates.		"	"
Mr. Geo. Lyell.		"	"
Dr. C. S. Sutton.		"	"

AS ORDINARY MEMBERS.			
Miss G. Neighbour, 845 Hampton Street, Brighton, S.5.	Mr. L. W. Cooper		Mr. F. S. Colliver.
Mr. John Turk, 287 Beaconsfield Parade, Middle Park.	Mr. A. H. Chisholm.		Mr. F. S. Colliver.

AS COUNTRY MEMBERS.			
Mrs. Nigel Gibson, Kirribille, Gisborne, Victoria.	Mr. L. W. Cooper.		Mr. A. S. Chalk.
Miss Marjorie Kinane, Archie's Creek, Gippsland, Victoria.	Mrs. E. M. Brunton.		Miss Lily A. Dyall.

4. Nominations for Membership.
5. Annual Report and Balance Sheet.
6. Election of Office-bearers, 1940-41.
7. General Business:—
 - (a) New Excursion List;
 - (b) Forthcoming Excursions.
8. Nature Notes.
9. Remarks by Exhibitors.
10. Presidential Address: "Adventures Among Birds."
By Mr. A. S. Chalk.
11. Conversazione.

SPECIAL NOTICE

Members are invited to note that a Special Meeting will be held at the Herbarium Hall, South Yarra, on Monday, June 24, at 8 p.m., for the purpose of viewing "Roving Coral Seas," a remarkable film of the Barrier Reef, shown in natural colours by Mr. T. C. Marshall, of the Queensland Museum. There will be no charge for admittance, but a silver coin collection for patriotic funds will be taken up.

The Victorian Naturalist

Vol. LVII.—No. 2

June 1, 1940

No. 678

PROCEEDINGS

Instead of the ordinary meeting, a *Conversazione* to celebrate the Diamond Jubilee of the Field Naturalists' Club of Victoria was held on Monday, May 13, 1940. The scene was the Victoria Palace, Melbourne.

Approximately 150 members and friends attended and a very successful and pleasant evening was spent. Those present included representatives of fourteen kindred societies, and greetings and good wishes were received from several others.

At the outset the following new members were declared elected: As Ordinary Member, Miss Esme Johnston; as Country Member, Mr. A. Coulson, M.Sc.; as Associate Members, Messrs. K. Petrie-Fairhead and G. G. Collis.

It was announced that the election of the following members as Honorary Members, for services rendered to the Club or to Natural History, had been approved by the Committee: Messrs. C. L. Barrett, F. Chapman, C. J. Gabriel, W. F. Gates, G. Lyell, J. Shephard,* and Dr. C. S. Sutton.

PRESIDENT'S REMARKS

Following the loyal toast, the President (Mr. A. S. Chalk) extended a cordial welcome to visitors from other societies and to Sir Edmund Teale, a former member of the Club who is visiting Australia from Tanganyika, where he is Government Geologist.

Mr. Chalk referred briefly to the founding of the Club sixty years ago, and displayed a framed photograph of the founder, the late Charles French, which had kindly been presented to the Club by his son, Mr. Charles French, a very early member of the Club, who was present at this meeting. There was only one foundation member now living, Mr. Chalk said; that was Mr. W. M. Bale, of Kew, who, unfortunately, was too frail to be present at this Diamond Jubilee gathering.

The President also mentioned that during the last war the Club had raised £700 for patriotic funds and had since contributed some £300 to hospitals and kindred institutions. He added that more young members were needed to carry on the work of the Club.

*It was with regret that members learned of the death of Mr. Shephard, which occurred only two days after the conferring of the Club's honour upon him. Mr. Shephard had been ailing for some time. A note regarding his work in natural history appears on page 36 of this issue.

THE CLUB'S ACTIVITIES

A short paper on "The Club's Activities—Past, Present, and Future" was read by Mrs. Blanche E. Miller. The genesis of the Club was traced briefly by Mrs. Miller, after which she referred to notable achievements, such as the securing of a reservation of 8,500 acres in East Gippsland and the reserving of Wilson's Promontory as a National Park; this latter was the direct outcome of a private excursion. During the last war, 12 members, 28 sons, and two daughters of members volunteered for active service, and of these at least 13 made the supreme sacrifice.

Mrs. Miller traced also the history of *The Victorian Naturalist* and concluded by expressing optimism regarding the future of the Club.

VICE-CHANCELLOR SPEAKS

Mr. J. D. G. Medley, Vice-Chancellor of the University of Melbourne, proposed the toast of "The Club and Its Pioneer Members." In a breezy reference to his "right" to be present, Mr. Medley mentioned that in his early days in England he had been treasurer of a Natural History Society, and his chief recollection of that experience was that he lost 7/7d. and had to make good the amount. He had regarded Nature study with a rather jaundiced eye for some time afterwards, but had now recovered.

Following some entertaining remarks regarding the association of Nature and literature, Mr. Medley said: "Some may wonder that we think of things like this, at a time like this. 'What does Nature study matter,' they may say, 'when the fate of nations is in the balance?' But these things matter very much—the things that you study. They are, some of us might think, almost the only permanent things left. However the follies of man may destroy the beauties of this world, the things that you study and and love will still go on. The birds will still sing. The ants and the bees will still continue their successful experiments in communism, and the wattles and the gum-trees will still go on giving their fragrance. I believe that our young people should be encouraged by every means in their power to prosecute this study which you love. The generation now coming to manhood may well find themselves totally adrift among the ruins of something they don't understand, unless they can be persuaded to take up interests such as those you have found pleasure in following in the course of your lives."

The toast was acknowledged by Messrs. G. Coghill and A. D. Hardy. The latter took occasion to convey greetings from the sole living foundation member, Mr. Bale.

NATURAL HISTORY MEDALLION

Mr. Medley, on behalf of 19 scientific and natural history societies associated with the bestowal of the Australian Natural

History Medallion, presented the first example of the Medallion (for the year 1939), to Mr. A. H. Chisholm, Hon. Editor of *The Victorian Naturalist* and President of the Royal Australasian Ornithologists' Union. The award had been made a few weeks previously by vote of the societies concerned.

Mr. Chisholm acknowledged the appreciative remarks made by the Vice-Chancellor and expressed thanks to the societies that had awarded him the Medallion. He referred also to the public spirit of the donor of the Medallion, Mr. J. K. Moir (President of the Bread and Cheese Club), and, in other remarks, made a plea for the preservation of vanishing bush areas.

VISITORS TOASTED

Mr. G. N. Hyam, proposing the toast of "Kindred Societies and Visitors," pointed out that the Club had always been glad to co-operate with other societies in the national interest. Supporting the President's plea for more young members, Mr. Hyam said that as he looked round the room he saw many grey heads. He added, somewhat hastily, that he excepted the ladies from this remark.

Interesting responses to the toast were made by Professor Turner (President of the McCoy Society) and Sir Edmund Teale. The latter said that he was very glad to be back in Australia and to meet many old friends.

EXHIBITS

The following exhibits of historical or general interest were displayed:

By the Club.—A set of the *Naturalist*, copies of the Fern Book, Shell Book, and the Census of Plants.

By Mr. C. J. Gabriel.—*Amoria gatliffi*, Sow, named in honour of an early Club member; *Comus seagravei*, Gatliff, from Western Port (named by an old Club member and the "father" of Victorian conchology; *Hedleyella atomata*, Gray, var. *kershawii*, Brazier, Lakes Entrance (named in honor of a pioneer of the Club, Mr. W. Kershaw); *Mitra glabra*, Swainson, dredged at Stony Point at a Club's Easter Excursion many years ago; *Pterospira roadknightæ*, McCoy, named by Sir Frederick McCoy in 1881; *Charopa gatliffi*, Gabriel, named in honor of Mr. J. H. Gabriel; *Nucula obliqua*, Lam. (a rare shell until dredged off Beaumaris on a Club Excursion); specimens of the genus *Harpa*, the first shells to be shown at a club meeting; prize book given in 1891 to himself by the Club.

By Mr. H. T. Reeves.—Coloured photographs of native flora.

By Mr. F. S. Colliver.—Specimens of graptolites named by Dr. T. S. Hall, a Club President at the time.

By Mr. F. Morley.—An exhibit showing how the *Naturalist* may be bound.

By Mr. E. E. Pescott.—Photographs of early Club activities and relics of old members.

By Miss R. S. Chisholm.—Photographs of early Club activities.

NOMINATIONS FOR OFFICE

The following nominations for office-bearers for the next Club year had been received:

President: Mr. L. W. Cooper.

Vice-Presidents: Messrs. C. L. Barrett, G. Coghill and H. C. E. Stewart.

Hon. Editor: Mr. A. H. Chisholm.

Hon. Secretary: Mr. F. S. Colliver.

Hon. Assistant Secretary: Mr. G. N. Hyam.

Hon. Treasurer: Mr. J. Ingram.

Librarian: Dr. C. S. Sutton.

Assistant Librarian: Mr. W. H. Ingram.

Committee: Mrs. C. L. Barrett, Messrs. R. H. Croll, I. C. Hammet, S. R. Mitchell, H. T. Reeves, H. P. Dickens, P. C. Morrison and J. H. Willis.

THE LATE JOHN SHEPHARD

It is with deep regret that we record the death, which occurred on May 15, of Mr. John Shephard. He was aged 87 years.

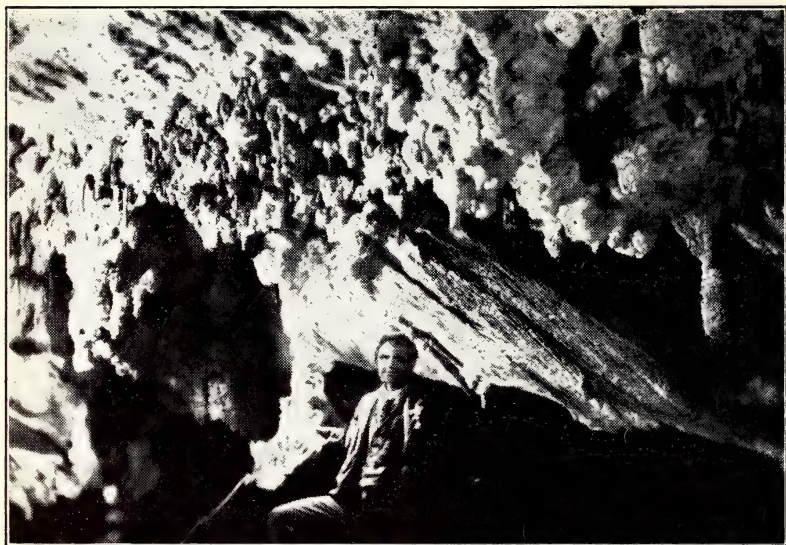
A keen naturalist, Mr. Shephard was especially interested in minute forms of life, and was an authority upon the Rotifers in particular. Because his interests lay in that special direction, he was most familiarly known in the ranks of the Microscopical Society of Victoria, of which he was a leading member since its foundation. Many younger microscopists have had cause to be grateful to him for information and guidance, both in the technical use of the microscope and in the study of Rotifers and other small forms of life. For many years he edited the society's "Proceedings."

Mr. Shephard became a member of the Field Naturalists' Club of Victoria in May, 1889, and was President in 1899-1900. His name was among the list of those honoured with life membership of the Club at its Diamond Jubilee meeting, only two days before his death.

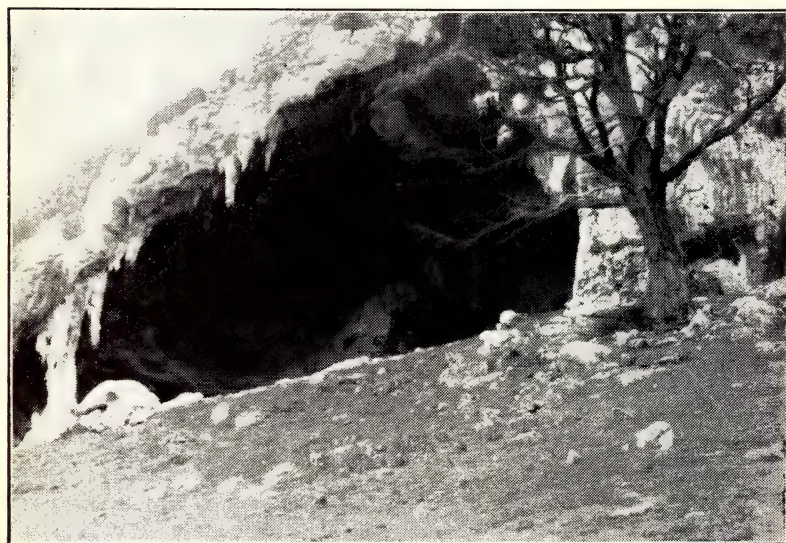
In addition to being a past president of the Royal Society of Victoria (of which he had been an active member for many years), Mr. Shephard was also a member of the Quekett Club, the famous English society for microscopy.

Mr. Shephard's wife, a son, and a daughter survive him. To them we extend the warm sympathy of members of the Club in their bereavement.

Plate V



Flashlight photo. of Batt's Caves. Dip of Dune limestone showing, also numerous small stalactites.



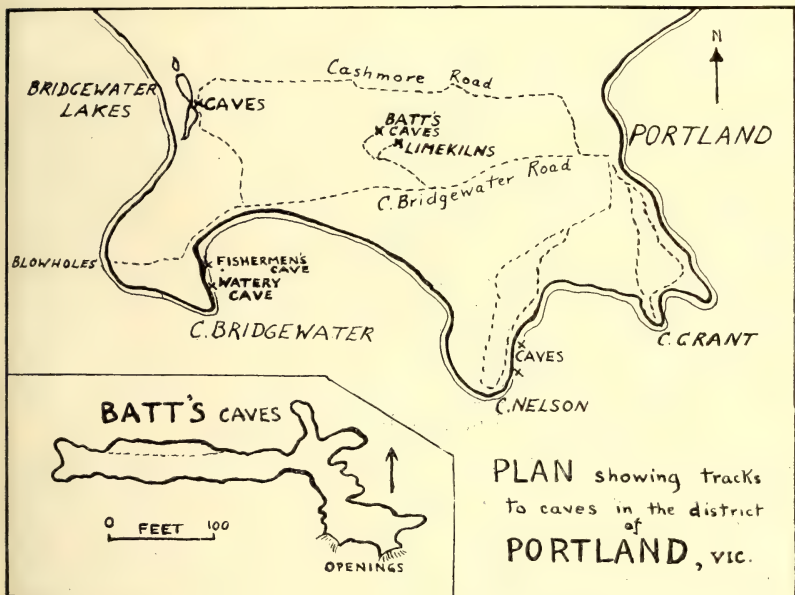
Caves at Bridgewater Lakes: altitude, 160 feet. Opening of main cave.

Photos. by M. E. Andrews.

CAVES IN THE PORTLAND DISTRICT

By ALAN COULSON, M.Sc., Melbourne

A recent article by the Club secretary, Mr. F. S. Colliver ("Cave Hunting in Victoria," *Vic. Nat.*, LIV, 1938) has prompted a thorough search of the caves in the Portland District. Nothing so interesting as the fossil bones described by Mr. Colliver from the Nelson Cave has been unearthed to date, but the opportunity is taken to publish a short account of the location of these caves and what may be seen in them.



Of course, they do not rival Buchan or Jenolan in beauty, nor Narracoorte in size, but nevertheless they are of considerable interest as they have been formed in Pleistocene dune limestone (which is, geologically speaking, quite young) yet the quantity of limestone removed, and the size of the stalactites, stalagmites and columns would indicate that many thousands of years must have elapsed since they began to take shape.

Batt's (often spelt Bat's) Caves are the largest and most interesting, though rather hard to find owing to lack of direction posts. They are reached by a track branching off from the Portland-Cape Bridgewater Road, at a point on the north side, about seven miles from Portland, and mid-way between two small bridges or large culverts, the only ones on this section of the road. The track meets a telephone line after half-a-mile and

follows it for another half-mile, to where there is a bend. Here a turn is made to the right, following a car track for about 300 yards until it peters out about 60 yards from a timbered dune ridge. The opening to the cave can then be seen in the ridge; it is about four feet in diameter.

After a steep descent for 50 feet at an angle of 25 degrees, the level floor of the cave is reached. Except for fallen rock, the remaining 150 feet of the main gallery is level, terminating in an upward slope towards what is apparently a former opening, now blocked by stone, sand and timber. The cave is dry and roomy, the average width being about 20 feet and the average height 15 feet.

Stalactites are numerous and well-developed on one side of the chamber, but the other consists of bare dune limestone with a dip of 33 degrees to the south-south-east, and thus a curious tent-like structure is exhibited. In one place there is a "frozen shower-bath," with innumerable small stalactites dripping on to a glistening, lime-encrusted floor, in which many broken-off stalactite tubes are cemented. There is a considerable amount of fallen rock near the junction of the three branches of the main gallery. Probably some of these are the result of falls in the last decade, as it is reliably stated that there was a small gallery, "with the roof covered by bats," visible in former years. No bats were seen in the course of a thorough exploration, but a number of tracks made by human and animal visitors have been cut off by rocks and probably their special gallery has been sealed up.

In Batt's Ridges there are at least a dozen minor caves known. Most of them lack stalactites, but several have very stout columns, now dry, and floors deeply covered in sand, suggesting that the cavities were of much greater size formerly. There are also several old lime-kilns in which the dune rock was calcined, though this industry is now abandoned. A chimney cave about 40 feet deep is located near the kilns.

At the Bridgewater Lakes, near Lightbody's House, on the eastern bank of the largest lake, there is a group of caves in a hillside, the floors of which are about 150 feet above sea level. They are rather shallow openings, penetrating only about 25 feet into the cliff of dune limestone, but overhung at the entrance by stalactites in very picturesque fashion. It has been argued that these caves were cut by waves and have reached their present position by uplift. However, search of their sandy floors for marine deposits revealed that only large edible shellfish such as mussels, whelks and mutton-fish were represented, along with flint scrapers and charcoal. The suggestion is that aborigines were responsible for the deposits. Near the openings there are numerous bones of mice on the floor, but these have been dropped from hawks' nests in the roof.

At the base of the sheer 400-feet cliff at Cape Bridgewater there are four big caves, two of which can be entered by boat. One is called the Fishermen's Cave and ends in a shelving sandy beach, but the other, called the Watery Cave, contains deep water for nearly all its length. There are also wave-cut caves of some size on the east side of Cape Nelson, particularly at a fishing spot known as "The Horseshoe."

Further afield are the caves at Drik Drik and along the Nelson River; these are in the Miocene limestone, and, being much older, are more likely to yield skeletal remains of extinct marsupials. Many of these have never been investigated. Some have never been entered.

The well-known caves near Mount Gambier, and at Tantanoola, Penola and Narracoorte are well worth visiting, though they have been so thoroughly examined that it is unlikely that anything new will be discovered there.

One remarkable feature of the caves is that the roots of trees, mainly eucalypts, are found growing in the sides and floors, at depths of 30 or 40 feet, and in very barren rock. A friend suggested to me that the roots sought to enter the rich sandy soil on the floors, where possibly the guano of bats had accumulated for years.

A REMARKABLE SPIDER

By JAMES PRESTON, Coburg, Vic.

While investigating a clump of common gorse in the vicinity of Essendon (Melbourne), I discovered several specimens of a spider belonging to the genus *Epeira*, resting in their webs. Two specimens were brought home for identification, together with a white mass of silk which I took to be the egg-mass of this species.

Visiting the site again the following morning, much interesting data concerning the habits and habitat of this spider was obtained. I record the following facts because of their unusual nature, and the hope that further investigation may be made regarding them. Omitting technical details, the description of this spider is as follows: Cephalothorax light brown; abdomen cream, with one longitudinal brown stripe down centre of dorsal surface and four transverse stripes, at equal distance; legs brown; eight eyes, four set in a square and one pair on either side; length 12 mm.; abdomen overhanging.

The daytime retreat of the spider is in the centre of a gorse clump, mostly perpendicular, but sometimes horizontal. It is dome-shaped and composed of opaque silk at the entrance, which is always at the lower end; the silk thins out until nearly an

open framework remains. While the diameter of the retreat is usually about 15 mm., the length varies from 10 mm. to 50 mm.

The retreats are constructed of waterproof material, rather rough on the outside but beautifully smooth inside. The spider rests in this retreat during the daytime, with her broad white abdomen facing the entrance; on glancing at the tube one would imagine that it was closed at either end. The white silk contrasts strongly with the green gorse and makes a conspicuous object.

I was very surprised to discover that the spider did not deposit her eggs in this structure, for it was to be expected that she would place them either in or around her retreat. Her egg-mass was some 12 inches away in an empty seed capsule, and when it was opened a mass of wriggling young spiders were ejected.

All the specimens discovered were females, so it is questionable whether the male constructs a web or retreat. I was greatly impressed by their immunity from the sharp points of the gorse. When disturbed they simply fall, regardless of what lies beneath; they fall directly on the sharp points and remain motionless until the danger has passed. The points which prick my hands at every move are disregarded by the spider, yet my hands are tough compared with her delicate skin.

When a specimen is disturbed it will drop, but no matter where it falls it will immediately draw up its legs and roll on its back. The resemblance to a dry seed case is remarkable and renders it almost invisible.

Another strange feature is the breeding season. The eggs are laid about the beginning of January and the young spiders emerge about March; thus the spiderlings are brought into the world to face the coldest portion of the year.

The most remarkable fact about this spider, and one in which I clearly see the result but have no inkling as to the cause, is its power of changing the pattern on the dorsal surface of the abdomen. When the spider is at rest, eight brown spots alone are visible; when it is alarmed these spots become connected by distinct brown bands. When a specimen is killed in the cyanide jar the marks can quite easily be seen growing more distinct. This is probably some strange power used by the spider for protection, but I am convinced that she has control over this colour-changing process.

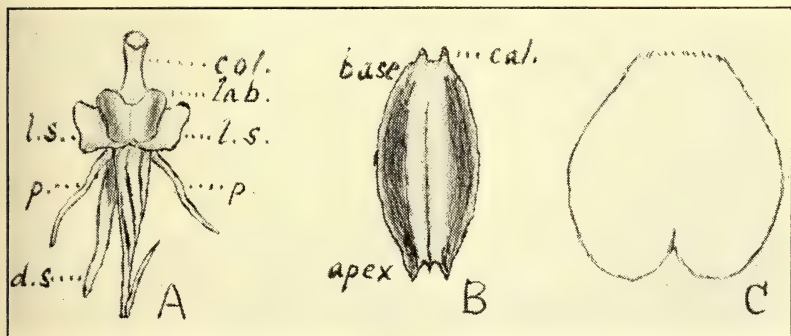
THE LATE MRS. CHAPMAN

Members of the F.N.C. greatly regret the death of Mrs. Chapman, wife of Mr. Frederic Chapman, one of our oldest and most esteemed members. Mrs. Chapman took a keen, if quiet, interest in natural history, and was a fond companion and source of stimulus to her husband in his palaeontological studies.

A PUZZLING NEW SOUTH WALES ORCHID

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

In this journal for May, 1935, I reported, with accompanying illustrations, the discovery in New South Wales of what appeared to be Mueller's *Liparis habenaria*, an orchid previously only known in tropical areas of Queensland. At the same time I pointed out that there were certain discrepancies between the features of this plant, which occurs in moderate abundance between the Brunswick River and Byron Bay, and the published descriptions of *L. habenaria*. My specimens were not in perfect condition, but as far as I could judge they were identical with some from Proserpine, N. Queensland, which I had determined as Mueller's species.



A: Flower from the front, $\times 4$. B: Labellum, greatly enlarged and flattened out. C: Outline of connate lateral sepals, greatly enlarged and flattened out.

The discrepancies referred to were chiefly concerned with the leaves and the lateral sepals. About the leaves I do not wish to add anything to the remarks made in 1935.

In March, 1940, Mr. A. W. Dockrill, of Kogarah, N.S.W., sent me a small raceme from a plant in his bush-house which he had himself collected between the Brunswick River and Byron Bay. The flowers were in better condition than any I had yet seen, and my attention was at once caught by the extraordinary character of the lateral sepals. These are very broadly ovate and almost completely connate, forming a mentum or "chin" directly under the labellum. The mentum is often twice the width of the labellum, which rests on it so closely that one would think they were actually united. Both labellum and mentum are sharply reflexed at the apex, and this reflexion conceals the character of the labellum-apex, which is *tridentate*. The disc is very concave above, owing to the presence of two thick, brown longitudinal marginal ridges. Two calli are present at the very

base. Column not extended into a foot. Pollinia 4, without caudicles. The whole flower, except for the brown labellum-ridges, is green. (*L. habenarina* is described as having yellow flowers.)

At my request, Mr. F. Fordham, of Brunswick Heads, procured some further specimens, but unfortunately they suffered rather severely in transit. Nevertheless I am able to say that the floral structure agrees precisely with that in Mr. Dockrill's raceme.

No description of the genus *Liparis*, as far as I can ascertain, makes provision for flowers having connate sepals; in all examples the sepals are said to be free. In most species they are linear, but some in Malaya and the Philippines have the laterals moderately broad. It can scarcely be doubted that J. J. Smith, Ridley, Oakes Ames, and Schlechter, in their descriptions of the orchids of the islands between Australia and Asia, would have mentioned the occurrence of connate sepals in *Liparis* species had they been present; but in such works of these authors as I have been able to examine, no such departure from the generic character is noted. Yet Dr. R. S. Rogers has observed (see my 1935 article) that in fragmentary specimens of *L. habenarina* sent from Dunk Island, the lateral sepals appeared to be united for barely half their length.

In all other respects these orchids from Dunk Island, Proserpine, and the N.S.W. north coast fall within the definition of the genus *Liparis*; and I know of no allied genus to which they could be allocated.

The difference between a flower with relatively narrow lateral sepals which are quite free, and a flower with broad lateral sepals which are firmly connate, is a difference of no small importance botanically, and should not be ignored. If we are to retain these plants in *Liparis* (and to me, I confess, that course seems preferable to creating a new genus for plants so obviously *Liparis*-like), the generic description should be widened to allow their admission: *i.e.*, the sepals should be described as "free, or rarely connate."

The tridentate character of the labellum-apex in the N.S.W. plant is, so far as I know, unique among Australian species of *Liparis*, but there are several Malayan species in which the apex is bifid or tridentate. No mention of a tridentate apex is made in descriptions of *L. habenarina*, nor did I observe it in the Proserpine plant. Fresh material from north Queensland is very desirable in order to decide whether the Brunswick-Byron Bay plant is really a distinct species.

The drawing of the plant itself which accompanied my 1935 article is fairly accurate; but I have added here some enlarged details which should supersede those of 1935, as they are drawn from flowers in much better condition.

REGENERATION OF COASTAL FLORA AT DROMANA

By W. L. WILLIAMS, Melbourne

In January, 1939, much of the cover along the cliffs at Dromana was destroyed by the fierce fire that formed the first link in a bush-fire chain girdling the State.

A visit to the area during the following week-end must have sent any lover of the district home in a condition of very deep depression. Setting aside the damage done to private property, it seemed that the whole of the vegetation for a distance of about a mile along cliff and foreshore was ruined for all time. Coast tea-tree, swamp tea-tree, eucalypts, acacias, banksias, casuarinas were all swept away. The few green shrubs or trees left by some freakish whim of the flames could have been counted on the fingers. Otherwise there were only charred stumps or blackened rods projecting from a surface of ash and soft dust. It seemed certain that the first rain would so scour the cliffs as to ruin any possible chance of regrowth.

In the interval that has passed much scouring has taken place, but the position is not nearly so hopeless as it seemed in the beginning. Native and introduced grasses made wonderful growth there as they did in other parts. For the time being, they appear to be holding the surface at the top of the cliffs. (Incidentally, at Christmas-time the grasses were thickly studded with tiny green Leek Orchids, then past their prime—especially *Microtis parviflora*.) The face of the cliffs is in a more serious condition, though in many places partly burnt or fallen tea-tree is checking the scouring very well indeed.

The first vegetation of a more permanent nature to recover has been the swamp tea-tree. Thousands of small seedlings could be seen in December, and these have made such fine growth that several areas are now densely covered with specimens from one to four feet high. As in the case of the coast tea-tree, no damaged spars have sprouted. The whole of the regrowth consists of seedlings.

From the rarity of seedlings noted in the district in years preceding the fire, and from the fact that practically all seed-trees had been destroyed, it was feared that the coast tea-tree would never restore itself unaided. Those fears, fortunately, were groundless. Though they have not appeared so readily as seedlings of the swamp tea-tree, there are more than enough young plants of the coast tea-tree to clothe the stricken area adequately. They have come up very well among the charred sticks of the old clumps, and on the slopes wherever there are pockets of soil or bars of debris to give them a foothold.

In some parts the burnt sticks were cut soon after the fire "to

give the young growth a chance." Up to the present this plan does not seem to have been very successful. Grasses and quicker-growing plants have done very well, but the seedling tea-tree has probably been choked. At any rate, it is not nearly so plentiful in such places as it is where the burnt sticks have been allowed to stand. They have apparently restrained the growth of grasses, and also possibly acted in a measure as tree-guards for the seedlings, which in many places are several inches high. The problem remains as to the stage at which the old growth should be removed. It would seem best to await until the young plants are high enough to fight the grasses, and high enough, too, to escape being trampled underfoot.

One of the sad losses has been the stout old casuarinas, notable not only for their shapeliness and their thick shade, but also for the sleepy music of their branches in the sea-wind. From the roots of the burnt trees many clumps of stunted sucker-growth are rising, but it is not likely that they will reach any size. A limited number of seedlings, however, are to be seen here and there, and it would be well worth while to stake them or otherwise protect them during the next four or five years. Generally speaking, casuarinas in their early stages grow very rapidly, and it will not be long before they are able to support themselves.

Young acacias of a feather-leaved species (possibly *A. mollissima* or *A. dealbata*) are, as might be expected, reacting to the severe burning by appearing in great numbers. Whether the thickets of seedlings should be thinned out at this stage is another question that calls for immediate decision. Already some of the little trees are three or four feet high.

A census of the plants coming back to the top of the cliffs would reveal, in addition, two or three species of seedling eucalypts, as well as many lesser breeds both within and without the law. Only wilful or thoughtless destruction—a thing always to be feared in picnic and camping localities—or another fire can now prevent the rehabilitation of Dromana's foreshore cover.

THE DIAMOND JUBILEE RECORD

Readers of *The Victorian Naturalist* will agree that the last issue, containing a history of the F.N.C. from its beginning sixty years ago, represented a considerable amount of faithful work on the part of Mr. E. E. Pescott. Both Mr. Pescott and the Acting Editor (Dr. C. S. Sutton) have been cordially thanked by the Committee for their work. It was almost inevitable that, in a detailed record of the kind, some few minor errors would occur. These will be corrected if brought to the attention of the Editor or Mr. Pescott.

Plate VI



Leucopogon Clelandii (Cheel). Photograph of a dried specimen magnified about $2\frac{1}{2}$ diameters.



Leucopogon Clelandii (Cheel), enlarged about 8 diameters from lower right hand portion of upper photograph.

LEUCOPOGON CLELANDII IN VICTORIA

By A. J. SWABY, Melbourne

This is a somewhat belated record of the discovery in Victoria of *Leucopogon Clelandii* (Cheel).

The description, from J. M. Black's *Flora of South Australia*, is as follows:

Low, erect shrub with pubescent branchlets; leaves spreading, convex above, suborbicular to ovate, 2-4 mm. long, with pungent mucro, minutely pubescent on both faces or glabrous above, sessile by a broad base; flowers solitary, axillary, drooping on very short peduncles, sepals 2-3 mm. long acuminate, branchlets $\frac{1}{2}$ as long, corolla-tube shorter than sepals and about as long as lobes, ovary pubescent, 2-3-celled, the disk divided almost to base into 5 lanceolate scales, styles slender, exceeding corolla-tube; drupe ovoid-oblong, pubescent, becoming 1-celled and 1-seeded.

Identification was confirmed by Mr. J. M. Black.

The nearest Beard-heath is *Leucopogon Woodsii* and the key in Ewart's *Flora of Victoria* might be followed to *L. Woodsii*, then divided thus:

Leaves subovate, flat, erect, without distinct mucro: *L. Woodsii*.

Leaves almost orbicular, convex above, spreading, with long, pungent mucro: *L. Clelandii*.

It is suggested that a suitable vernacular name would be "Tiny Beard-heath."

The discovery was made simultaneously, on 28th August, 1937, by Mr. Frank Oliver, of Duchembegarra, and Mr. Harold Smith, of Horsham, a member of the Club. The only proved locality in Victoria is in a slight depression leading to a small salt lake not far from the main track across the Little Desert from Natinuk to Dimboola. It forms an undershrub to *Melaleuca neglecta*. This may account for its late discovery. I should not be surprised to find that it occurs wherever *Melaleuca neglecta* is found. Several years ago I found a specimen closely resembling it on the east side of the Black range—again with *Melaleuca neglecta*—but the specimen, in leaf only, was lost before close examination could be made.

Hitherto, this Beard-heath has been reported only from South Australia (Kangaroo Island, Coonalpyn, and Ooldea), and is regarded as very rare.

The photographs were taken from a pressed specimen ten months old.

A BEAUTIFUL FILM

Mr. T. C. Marshall, Ichthyologist of the Queensland Museum, is to show his natural colour film, "Roving Coral Seas," to a special gathering of the Victorian Field Naturalists' Club at the National Herbarium on June 24. A few days ago Mr. Marshall received a letter from Lady Stonehaven, wife of a former Governor-General, expressing the hope that he was continuing his work on the Barrier Reef and stating that she hoped he would be able, some day, to bring his beautiful films to England.

BOTANICAL NOTES FROM WHITFIELD

By H. C. E. STEWART, Melbourne

No record can be found of a previous visit to Whitfield, hence the trip made by nine members on 21-25 March, 1940, is regarded as the first official excursion there sponsored by the Club.

The locality, which is on the fringe of the extensive north-eastern mountainous ranges, possesses a wealth of Nature interest, and the fine weather throughout the holidays enabled full advantage to be taken of spending a maximum of time out of doors.

A first apparent feature is the glory of the individual eucalypts bordering the roads in and around the township. The chief species included *E. rubida*, *E. globulus*, *E. macrorrhyncha*, *E. camaldulensis*, *E. hemiphloia*, and *E. melliodora*, all splendid specimens of their kind. The vegetation of the King River valley and the high slopes of the nearer ranges shows considerable diversity, with many species peculiar to the district. Among the leguminous plants the Ovens Wattle, *Acacia pravissima*, thrives on the river flats and is a valuable factor in reclaiming soil in danger of eroding away by water action. Another even finer legume to attract attention is the Grey Bush-pea, *Pultenaea Cunninghamii*, very profuse on the gravelly sides of the steep hills. The foliage at first glance appears like a miniature juvenile eucalypt, with which it is often confused. The leaves are usually, as described by Ewart, in whorls of three, with a sharp pungent point, but leaves in whorls of four were not infrequently seen. The singular beauty of the foliage suggests that the species should be better known.

Despite the damage of bush fires of last year, the forests already show amazing re-growth. This is particularly noticeable on slopes running down to the watercourses, where the fires had swept the forest floor but only lightly burned the mature trees. Visits were paid to the Gentle Annie Gap, on the Myrtleford road, and thence to the Rose River, viewing lovely scenery and bush attractions *en route*. Some of the party travelled on to Dondangadale, where magnificent views are obtained of the Buffalo Horn. The King River was explored for several miles on two occasions, the rich farmlands interspersed with expanses of virgin river forest presenting a picture of charm. Plants to attract attention included *Eucalyptus viminalis*, *Leptospermum attenuatum* ("Slender Tea-tree"), *Hypericum gramineum* (in flower), *Lotus australis*, *Centipeda Cunninghamii*, fine examples of *Exocarpus cupressiformis*, and a lowland form of *Bossiaea foliosa*. Notwithstanding the dryness of the summer season, the Purple Loosestrife, *Lythrum salicaria*, blossomed abundantly in moist places.

A fine scenic run past Whitlands to Power's Lookout one afternoon proved a sheer delight. The only regret expressed was that

the time permitted only a superficial glance at all the botanical wealth present. From the Lookout itself a wide panorama is obtained, with the Buffalo dominating the distant Alps, Mount Cobbler in the middle distance, Mount Buller to the right, the Beechworth ranges on the north, and the verdant King River valley a thousand feet below. At the precipitous edge of the Lookout the conglomerate rock gives evidence of an ancient river bed. A profusion of native plants, that must form a picture in the spring, was observed, the commoner species noted being *Eucalyptus dives*, *Calythrix tetragona*, *Leptospermum attenuatum*, with graceful bronze foliage, *Monotoca scoparia*, particularly tall *Tetratheca ciliata*, *Acrotriche serrulata*, and *Isotoma axillaris*. On the return journey in the late afternoon light, the intense blue-grey of some juvenile Blue Gums (*Eucalyptus globulus*) in a steep gully evoked admiration. In this region, also, the White-top Messmate (*Eucalyptus vitrea*) is to be seen.

All members of the party agreed that the district is well worthy of a more extended visit in the future.

BIRD NOTES FROM WHITFIELD

By BLANCHE E. MILLER, Melbourne

The Easter excursion to Whitfield was not remarkable for either the species or numbers of birds seen, but it provided some unusual observations.

On the journey up, we were fortunate in seeing no fewer than four large flocks of White-browed Wood-Swallows on their northern migration. The first flock, noticed about fifty miles out, numbered at least 250 to 300 birds. When we saw an equally large flock feeding on the roadside, some two miles farther on, we stopped the car. In the space of a few minutes they had passed and were well ahead, feeding hurriedly as they steadily moved northward. At Mangalore (68 miles) a third flock was observed, some feeding, some resting; and at Violet Town (107 miles) a fourth large flock was resting quietly on the telegraph lines in the sunshine. At a conservative estimate there must have been a total of 1,000 birds, all told.

The question that presents itself is: Where are these birds during the nesting season? The White-browed Wood-Swallow is a comparatively rare visitor to the south. Older generations of naturalists connected their visits with droughty conditions inland. There are but few occasions when we see this species south of the Dividing Range, and certainly not in any considerable number.

Continuing the journey north, we noticed odd birds, all the

way along, as if they knew that the great trek had begun, and were waiting to join the main body. It would also appear that, for part of its way, the migrational line follows the Hume Highway.

By the greatest good fortune we halted for lunch, south of Wangaratta, immediately beneath a tree in which a pair of Diamond Firetails were busily building in a disused nest of a Magpie-Lark. Finch-like birds, being seed-eaters, are known to have an exceptionally long nesting season. They are also known to utilize and adapt the nests of other birds "under stress of emergency," but, so far, we have not heard of a mud nest, placed on a very high limb, being so used. Nearby, another pair of these Spotted-sided Finches—as they are sometimes called—were building, at an unusual height. So engrossed were they with their occupation that they continued to select long grass stems, many times their own length, growing almost at our feet.

Although our party was not travelling in company, on the homeward journey every member was enabled to see both these nests, simply because we had had the forethought to make a note of the number of the telegraph pole directly opposite: No. 853.

For the third time in our experience, we picked up a Tawny Frogmouth, a nocturnal bird that had ventured out into bright sunshine and met an untimely end.

A Yellow-billed Spoonbill, "weaving" its quaint bill to and fro as it waded in a shallow billabong, was an interesting sight.

Having arrived at Whitfield a little in advance of our fellow-excursionists, we proceeded to the King River, and compiled a good list of birds, but nothing of outstanding importance. During the afternoon, some additions were made, the Noisy Friar-bird being new to a few of the members. Other trips yielded notes of interest; particularly so was Mr. Stewart's report of a colony of Bell-Miners at the Rose River.

The ease with which the curiosity of the Whistling Eagle can be attracted, was demonstrated, enabling the members to notice the spreading wing—"fingers." Although it answered to a whistle, the eagle did not give the peculiar laughing note that was responsible for its earlier name, *canorus*.

While waiting for the other cars, Mr. Miller noticed a Pardalote entering and leaving its nesting burrow. By quietly watching, he saw both parent birds repeatedly fly into the burrow with food, thereby establishing a very late record for the nesting of the Red-tipped Pardalote. Sometimes they removed the excreta, but not on every occasion.

The district impresses one as being worth revisiting. The proximity of the river, and a deep water-course that meanders through the township, should attract many birds.

Field Naturalists' Club of Victoria

OFFICE-BEARERS, 1939-40.

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Messrs. R. H. Croll, Ivo C. Hammet, G. N. Hyam, S. R. Mitchell,
H. T. Reeves and H. C. E. Stewart.

EXCURSIONS

MONDAY, JUNE 17 (King's Birthday Holiday).—Sherbrooke Forest.
Leaders: Messrs. A. G. Hooke and H. C. E. Stewart. Subject:
Lyre-birds and Fungi. Motor transport from 19 Russell Street
at 10 a.m. Fare, 4/-, subject to fifteen or more persons booking.
Names to be handed to the Secretary not later than June 10.

SATURDAY, JUNE 22.—Agriculture School, University. Leader:
Miss J. W. Raff, M.Sc. Subject: Entomology. Meet at the
University Conservatorium Gate at 2.30 p.m.

SATURDAY, JUNE 29.—National Museum. Leader: Mr. A. S.
Kenyon. Subject: Archaeology. Meet at the Swanston Street
entrance at 2.30 p.m.

Lectures at the National Museum during the month include:

Saturday, June 8: "The Pastoral Pioneers of Victoria."

Saturday, June 15: "Family Organization among the Ancients."

Saturday, July 6: "The Coins of Scotland and Ireland."

Each of the above lectures will be delivered by Mr. A. S. Kenyon.
They are held in the "Print" room at 3 p.m., and are free to the public.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

VICTORIAN SEA SHELLS, by C. J. Gabriel, describing 150 shells, all to be found in Port Phillip, is abundantly illustrated. Price, 1/6.

A CENSUS OF VICTORIAN PLANTS, by the Plant-names Committee of the Club, contains the vernaculars of all our plants. Price, 3/6.

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TAVISTOCK: *Parrots and Parrot-like Birds in Aviculture*, 27/6, new.

BARRETT: *In Australian Wilds*, 10/6 at 8/6.

COX: *Evolution of the Australian Merino*, 21/- at 7/6.

EDGEWORTH DAVID & TILLYARD: *Memoir on Fossils of the Late Pre-Cambrian (Newer Proterozoic) from the Adelaide Series, S. Aust.*, 7/6 at 2/6, new.

HOSKING & NEWBERRY: *Intimate Sketches from Bird Life*, 8/6, new.

GRIMWADE: *Anthography of the Eucalypts*, new, £2/2/- at 17/6.

McKEOWN: *The Land of Byamce*, 6/- at 3/6, new.

CHALMERS: *Birds Ashore and Aforeshore*, new, 25/-.

DRANZLIN: *Abbilduncen der in Deutschland*, 1904, in German, 32/6.

MORRIS: *Orchids of Ontario*, half-leather, 10/6.

LOWNE: *The Blowfly* (Anatomy, Physiology, Morphology and Development), 1890-92, 2 vols., £2/7/6.

VESEY-FITZGERALD: *A Book of British Waders*, new, 8/6.

MOGGRIDGE: *Harvesting Ants and Trapdoor Spiders*, with supplement, 1873, 14/6.

HANSEN & SORENSEN: *On Two Orders of Arachnida*, 1904, £1.

HULME: *Butterflies and Moths of the Countryside*, 10/6.

LE SOUEF & BURRELL: *The Wild Animals of Australasia*, 20/-.

COMSTOCK: *An Introduction to Entomology*, 2nd complete ed., 1925, 30/-.

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JULY, 1940



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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1940

Field Naturalists' Club of Victoria

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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, JULY 8, 1940

1. Minutes.

2. Subject for the Evening: "The Grandeur of the Grampians," by
Mr. Gilbert F. Rogers. Illustrated by the Epidiascope.

3. Correspondence and Reports.

4. Election of Members.

AS ORDINARY MEMBER.

Miss Elsie M. Parsons,
49 Haines Street,
Hawthorn, E.2.

PROPOSER.

Mrs. Legge.

SECONDER.

Mr. L. W. Cooper.

AS COUNTRY MEMBER.

Mr. Nigel Gibson,
"Kirribilli,"
Gisborne, Victoria.

Mr. L. W. Cooper.

Mr. F. S. Colliver.

Mr. Charles Burley,
Wallaby Creek,
Whittlesea, Victoria.

Mr. W. H. Nicholls.

Mr. L. W. Cooper.

AS ASSOCIATE MEMBERS.

Miss Margaret Savill,
253 North Road,
Caulfield, S.E.8.

Miss Sylvia Duncan.

Mrs. C. L. Barrett.

Mr. G. I. Dundas,
45 Middle Street,
Ascot Vale, W.2.

Mr. L. W. Cooper.

Mr. F. S. Colliver.

5. Nominations for Membership.

6. General Business.

- (a) Forthcoming Excursions;
- (b) New Excursion List;
- (c) Wild Nature Show Proposal;
- (d) Questions by Members.

7. Remarks by Exhibitors.

8. Conversazione.

The Victorian Naturalist

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No. 679

PROCEEDINGS

The Annual Meeting of the Club was held at the Royal Society's Hall, on Monday, June 10, 1940. The President, Mr. A. S. Chalk, presided, and about 100 members and friends attended.

MINUTES

The minutes of the previous meeting were taken as read.

BEREAVEMENTS

The President referred feelingly to the deaths of two Club members, Mrs. F. Chapman and Mr. J. Shephard. All present stood in silence as a mark of respect.

CORRESPONDENCE

- (a) A.N.Z.A.A.S. cancellation of Adelaide Meeting notified.
- (b) Crown Law Department, re the recent Court case at Wangaratta, regarding leases in National Parks, and stating that the decision was "Non Suit."

REPORTS OF EXCURSIONS

Excursions were reported on as follows:—Studley Park, Mr. F. S. Colliver; Botanical Gardens, Mr. W. H. Ingram; Geological Survey Museum (Mines Department), Mr. F. S. Colliver for Mr. Geo. Brown.

ELECTION OF MEMBERS

The following were elected as honorary members of the Club:—Messrs. C. L. Barrett, F. Chapman, C. J. Gabriel, W. F. Gates, Geo. Lyell, and Dr. C. S. Sutton. Mr. Barrett, Mr. Gabriel and Dr. Sutton returned thanks in person, and letters of acknowledgment were read from Messrs. F. Chapman, W. F. Gates and Geo. Lyell.

The following were elected as ordinary members of the Club:—Miss G. Neighbour and Mr. John Turk; and as country members, Mrs. Nigel Gibson and Miss Marjorie Kinane.

AUG 14 1940

ANNUAL REPORT AND BALANCE SHEET

The Annual Report was read by the Secretary, and its adoption was moved by Mr. Barrett, seconded by Mr. Coghill, and duly carried. It was agreed that the thanks of the Club were due to the Secretary and Assist. Secretary for the work they had done during past years.

The Balance Sheet was read and explained by Mr. A. G. Hooke. On the motion of Mr. F. E. Wilson, seconded by Mr. A. D. Hardy, this was received and adopted.

ELECTION OF OFFICE-BEARERS, 1940-41

Before conducting the election, the retiring President (Mr. Chalk) thanked the various officers for their assistance during his year of office. He mentioned especially Mr. Colliver, Mr. G. N. Hyam, and the members of the Ladies' Committees who carried out the arrangements for the Wild Nature Show and the Diamond Jubilee.

ELECTION OF OFFICERS

Mr. Chalk stated that as only one nomination, Mr. L. W. Cooper, had been received for President, he had much pleasure in vacating the chair in his favour.

Mr. Cooper expressed deep thanks to Mr. Chalk for past services, not only as President, but in other offices of the Club, and to the members for the honour of his election. He said that whatever the President might do, it rested with the members generally to justify our name of a Field Naturalists Club. Mr. Cooper further stated that he desired to know all members personally, and asked that all new members should make themselves known to him.

The following officers were elected unopposed:—

Vice-Presidents—Messrs. C. L. Barrett and Geo. Coghill.

Editor—Mr. A. H. Chisholm.

Secretary—Mr. F. S. Colliver.

Assist. Secretary—Mr. G. N. Hyam.

Treasurer—Mr. J. Ingram.

Librarian—Dr. C. S. Sutton.

Assist. Librarian—Mr. W. H. Ingram.

The result of the ballot for Committee was as follows:—Mrs. C. L. Barrett, Messrs. H. C. E. Stewart, S. R. Mitchell, Ivo Hammet, J. H. Willis. (Mr. A. S. Chalk is a member *ex officio*.)

GENERAL BUSINESS

(a) New Excursion List.—Members were asked to submit localities for consideration by the Committee.

(b) The Secretary announced that two members, Mr. Alan Coulson and Mr. D. Geddes, had joined the A.I.F. and the Navy, respectively.

NATURE NOTES

Mr. W. H. Ingram reported that a Grey Thrush had been noticed eating caterpillars, presumably of the Cabbage Butterfly, off cabbages.

Mr. Crosbie Morrison referred to notes he had had regarding strange behaviour of Blackbirds, which repeatedly dashed against windows. Mrs. Barrett stated she had also noted this; the position of the windows ruled out the possibility that the bird was attacking its own image.

QUESTION BY MEMBER

"What is a bird, about the size of the Indian Myna, having a buff breast, crested head, white streak on cheek, and brown or grey back. (Seen in Melbourne.)"

Answer by Mr. A. H. Chisholm: Probably the Asiatic Bulbul.

PRESIDENTIAL ADDRESS

This address, the title of which was "Adventures among Birds," was given by the retiring President. The thanks of the Club were accorded Mr. Chalk by the President, who stated he hoped to hear more of these adventures in the future.

EXHIBITS

By Mr. Crosbie Morrison:—*Geaster fenestriatus*, a rare fungus of the earth-star and puff-ball group. (Suggested that "Jack-in-a-box" fungus would be a good name for this species.) Rare abnormality in garden snail, the spire being open. Small Victorian scorpion (alive).

By Mr. C. J. Gabriel:—A coral-living mollusc from Mauritius (*Magilus antiquus* Montf.); also *Australium stella*, Lam., from Northern Australia.

By Mr. S. R. Mitchell:—Ground-edged implements, from the Gold Coast, West Africa.

By Mr. A. A. Baker:—Petrified woods, from Bruthen, Omeo, Buchan, and Bairnsdale.

By Mr. F. S. Colliver:—*Bulinulus oblongus-crassus*, a large land shell, from Africa.

By Miss G. Neighbour:—Photographs of the leaf-curling spider (*Araneus wagneri*), showing that the spider had selected a cigarette paper as material to build its retreat. This species usually builds its home with a leaf, but it has been known to use as substitutes empty snail shells, acorns, and even scraps of newspaper.

SIXTIETH ANNUAL REPORT, JUNE, 1940

Your Committee has pleasure in submitting the 60th Annual Report:—

The membership is as follows:—Life members, 1; Honorary members, 16; Ordinary members, 245; Country members, 62; Associate members, 22. Total, 346. This is an increase of 16 on the figure of the last report.

We record with sorrow the death of the following members of the Club:—Mrs. F. Chapman (1925-40). Mr. J. E. Dixon, a Foundation member (1880-1940), and Mr. J. Shephard (1889-1940). Mr. Burdett, of Basket Range, S.A., and Mr. Albert Morris, of Broken Hill, two very good friends of the Club, also passed away this Club year.

Attendances at the meetings have been well sustained, and seating accommodation was over-taxed at times. The second room is still in use for the display of exhibits, and the Committee asks that greater efforts be made to stage displays of interest.

With the exception of the Diamond Jubilee, all of the meetings have been held at the Royal Society's Hall, and again the epidiastope has proved its value in the illustrating of the lectures.

The following was the programme of lectures for the year:—Presidential address, "A Trip to the Great Barrier Reef," by Mr. R. H. Croll; "Caves and Cave Hunting," a symposium opened by Mr. C. L. Barrett and spoken to by the Rev. Geo. Woolf and Messrs. G. N. Hyam, D. A. Casey and F. S. Colliver; "Vegetable Foods of the Australian Aboriginal," by Mr. G. N. Hyam; "An Evening with the Microscope," by Mr. O. H. Coulson; "Plant Minorities and Problems of Plant Distribution," by Prof. J. S. Turner; "The Nullarbor Plains," by Rev. Geo. Woolf; "Nature Notes," by Messrs. S. R. Mitchell, A. H. Chisholm, Ivo. Hammett, and F. S. Colliver; "Abroad with a Motion Picture Camera" (a full-size natural colour film), by Mr. K. G. Luke; "Botanical Affinities between South Africa and Australia," by Dr. C. S. Sutton, Mr. G. N. Hyam, and Mr. F. S. Colliver; "Australian Flora and Fauna in Art," by Mr. A. E. Anderson; "Out-door Museums of Sweden," by Miss R. S. Chisholm.

The Diamond Jubilee was held at the Banquet Hall, Victoria Palace, and took the form of a *Conversazione*. About 150 members and visitors attended. The programme included a series of toasts and responses, a short address on "The Club's Activities—Past, Present and Future," given by Mrs. Blanche E. Miller, the presentation of the Australian Natural History Medallion, and a small series of exhibits. Provision was made for intervals when members could move about and greet friends, and altogether the whole function was a great success. Representatives of allied

societies and distinguished guests were present, and during the evening congratulatory telegrams and letters were read out.

During the year a ballot for the number of excursions was held, and the result favoured two a month; with this as a guide, a comprehensive series has been held during the year, and some of them have been very well attended.

Volume 55 of *The Victorian Naturalist* has been completed, and although for economical reasons the journal has had to be restricted in size, much of interest and scientific importance has been published. That it continues to hold its place in scientific literature is shown by additional demands for it from scientific bodies both in Australia and overseas. It is of interest to record that the *Naturalist* goes to Soviet Russia now as an exchange.

In the early part of the Club year, it was with deep regret that we accepted the resignation of Mr. C. L. Barrett as Hon. Editor of the *Naturalist*, he having decided to retire and go abroad for at least two years. A farewell luncheon was tendered to Mr. and Mrs. Barrett and presentations were made, and shortly afterwards they left for Northern Australia. Subsequently, the international situation became so difficult that they have been forced to remain in Australia, so it is our good fortune to have them still with us.

The last volume of the *Naturalist* has been under the Editorship of Mr. A. H. Chisholm.

The Club continues its activity in the preservation of the wild life of Australia. Matters that have been inquired into include:—Felling of timber in Sherbrooke Forest, grazing in National Parks, illicit shooting of native fauna, thryptomene on sale at the markets, and poisoned seed allegedly being sold for birds.

During the year the Club sought the assistance of the Royal Society and scientific bodies of all the States, to investigate the possibility of preventing the export of fossil material without supervision. All of the societies were of the opinion that some such step was necessary, and each body approached its State Government Department in the matter. We are pleased to report that a regulation has been passed to the effect that no material as types or rare specimens of value to our Museums can leave the country. This regulation is not aimed at preventing exchanges being made, but at retaining important material in our own country for our own workers' benefit.

Our assistance was sought in the matter of suitable trees and shrubs for planting at Warrnambool, in the matter of the proposed road into the Werribee Gorge, and for a deputation re National Monuments.

The Department for Information, made necessary by the war situation, asked for our co-operation in all ways possible, and the Committee has agreed to the request.

Unfortunately, we record little change in the National Monuments movement, but the Committee will keep the matter in hand until such time as conditions are more settled. We again ask members to advise us of any localities or objects they consider worthy of proclamation as "National Monuments."

A week-end excursion to Ararat was held during the year, and Mr. A. H. Chisholm, as Club representative, unveiled a Memorial to the late George Gossip, sometime President of the Ararat F.N.C., in McDonald Park. A very interesting time was had by those who attended, and we are hopeful that a return visit by the Ararat Field Naturalists Club will be made in the near future.

We are represented on the Council of the League of Youth, and are members of the Horticultural Council of Victoria and the Australian and New Zealand Association for the Advancement of Science. During the year we have assisted allied societies in other States and the Horticultural Society of Canberra by exhibits of native flora.

Our assistance was asked for the Floral Festival, and we agreed to stage a display to last one week. Our floral exhibit surpassed all previous efforts and was a great attraction to the many visitors. Again a comprehensive display of other natural history branches was staged, and in most cases members were on duty to assist laymen by answering questions and explaining exhibits. Owing to the situation overseas, we decided to relinquish, with the other bodies concerned, our share of the profits, which were devoted to the Red Cross funds.

During the year several meetings were convened by the Club toward the award of the Australian Natural History Medallion, and eventually, at the ballot, our nomination of Mr. A. H. Chisholm (who was also nominated by several other societies), was the successful candidate. This Medallion was presented at the Jubilee meeting.

During the year the Committee voted an honorarium to Mr. H. T. Reeves to enable him to mount the large number of photographs he has brought together for the photographic library.

The Librarian, Dr. C. S. Sutton, reports that additional books and pamphlets have been bound during the year, and that the Royal Society of Victoria has donated valuable early volumes of Proceedings of the Australian scientific societies toward our endeavour to complete our sets. We have also to thank Messrs. C. L. Barrett, S. C. Richardson and C. French for valuable donations of books to our general library, which is now becoming a good collection of Natural History works. Mr. C. French, at the Jubilee, presented to the Club a photo. of the Club's founder, and we are very grateful for this donation.

During the year we have welcomed to our meetings overseas naturalists and members of interstate Naturalists' Clubs, and we

have been pleased to see some of our country members from time to time.

We record with pleasure that two Club members have been honoured during the year—Mr. F. Chapman received honorary membership of the Royal Society of N.S.W., and C. L. Barrett received the F.R.Z.S. We were pleased to elect Mr. J. A. Ross to honorary membership.

During the year we were pleased to welcome home to the comparative safety of Australia:—Mr. and Mrs. E. E. Pescott, Miss Lexie Clarke, Miss Vi. Fletcher, and Mr. Noel Lothian. The last-named member was in a position at the Munich Botanical Gardens, and was recalled to England just prior to the declaration of war.

A Special General Meeting was held to consider the advisability of changing the rule relating to subscriptions for country members. It was then decided that the matter be held over for six months.

During the year we elected Messrs. Ivo. Hammet and H. T. Reeves to the Committee. This year twelve general meetings and one special meeting were held, and eleven ordinary committee and two special committee meetings were held. The attendance of officers was as follows:—Messrs. A. S. Chalk, H. C. E. Stewart, L. W. Cooper, 13; Messrs. W. H. Ingram, F. S. Colliver, 12; Messrs. G. Coghill, G. N. Hyam, Dr. C. S. Sutton, 11; Mr. Ivo. Hammet, 9; Messrs. S. R. Mitchell, J. Ingram, 8; Mr. A. H. Chisholm, 7; Messrs. R. H. Croll, H. T. Reeves, 6; Mr. and Mrs. C. L. Barrett, 1.

A. S. CHALK, *President*.

F. S. COLLIVER, *Secretary*.

NEWS FROM MARANOA GARDENS

The Maranoa Gardens, Balwyn, now one of the show spots of the kind in Melbourne, are full of promise for the spring. A visit to-day (June 26) revealed that many species of native trees and shrubs are already awakening from their seasonal sleep—if they get any. For example, spring foliage is already showing in the delicate pink satiny tips of the Bottle-brushes (*Callistemon*) and the sage green and mahogany foliage of the Lilly-pilly group (*Eugenia*). The early-flowering Wattles are already laden with tiny yellowing buds, whilst some shrubby Grevilleas and Lomatias are breaking their early blossoms. The Rosy Rice-flower from W.A. (*Pimelea ferruginea*) should be named "All-the-Year-Round," for I am assured by Mr. Bury, who knows all the virtues of the plants under his care, that it has never ceased to bear its attractive, delicate pink blossoms throughout.

The addition to the Gardens of a strip of land 80 feet wide running down its length is being rapidly planted with healthy native trees, donated by the Melbourne City Council and the Melbourne Botanic Gardens, besides others skilfully transplanted from the Garden proper.

Since visitors from Melbourne, as well as from other States, are rather hazy as to the time of opening of the Gardens, it may here be useful to mention that the new arrangements are as follow: On Saturdays, Sundays and Public Holidays, from 2 to 5 p.m.; other week-days, from 8 to 5 p.m.

F. CHAPMAN.

RECEIPTS		EXPENDITURE	
Subscriptions—		Balance at Banks on 30th April, 1939—	
Arrears	£43 5 6	E.S. & A. Bank Overdraft	£60 0 0
Current	194 0 0	Less State Savings Bank credit	32 18 5
In Advance	14 5 0		£27 1 7
Cash Sales of—	£251 10 6		
<i>Victorian Naturalist</i>	£17 6 2	<i>Victorian Naturalist</i> —	
Shell Book	1 8 0	Printing	£164 17 6
Fern Book	1 14 8	Illustrating	50 14 5
Census of Plants	6 0	Despatching	6 7 3
Badges	16 0		£221 19 2
Advertisements	21 10 10	Reprints	4 8 6
Interest Received—	5 14 0	Postage and Freight	11 15 0
“Best” Fund £50 @ 3%	£1 10 0	General Printing and Stationery ..	8 6 7
Fixed Deposits £200 @ 3%	6 8 11	Rents—	
Savings Bank current a/c.	14 5	Royal Society's Hall ..	£16 0 0
Commonwealth Loan £600	23 8 9	Committee Room	2 5 0
		Caretaker for Royal	
Wild Nature Exhibition	32 2 1	Society's Hall	1 10 0
<i>Diamond Jubilee</i> tickets	60 4 9		19 15 0
	7 4 0	General Expenses—Insurance, Bank	
		charges, etc.	9 18 8
		Library	1 2 9
		Donations—	
		Advisory Council for	
		Fauna and Flora	£4 4 0
		A. & N.Z. Council for	
		Advancement of	
		Science	1 1 0
			5 5 0
		Wild Nature Exhibition expenses ..	59 13 4
			342 4 0
		Balance at Banks on 30th April, 1940—	
		State Savings Bank credit	£57 1 7
		Less E.S. & A. Bank overdraft	48 1 0
			9 0 7
			£378 6 2

BALANCE SHEET ON 30th APRIL, 1940

LIABILITIES

Late Mr. Dudley Best Fund	£50 0 0
Subscriptions paid in advance	14 5 0
Special Trust Account	12 15 3
E.S. & A. Bank Overdraft	48 1 0
	<u>£125 1 3</u>

Balance, being surplus of Assets over Liabilities 1,525 15 7

£1,650 16 10

Examined and found correct on 7th June, 1940.

A. S. CHALK
A. G. HOOKE

Honorary Auditors.

J. INGRAM, Hon. Treasurer.

ASSETS

Arrears of Subscriptions, £90—	
Estimated to realize	£50 0 0
State Savings Bank—	
General Account	£57 1 7
Special Trust Account	12 15 3
	<u>69 16 10</u>

Investments—

E.S. & A. Bank Fixed Deposit	50 0 0
"Best Fund"	200 0 0
E.S. & A. Bank Fixed Deposits	600 0 0
Commonwealth Bonds	850 0 0
	<u>650 0 0</u>

Library, Furniture and Epidiascope—

At insurance value	650 0 0
Stock of Books and Badges—	
At valuation—	
Fern Book	£25 0 0
Plant Census	1 0 0
Shell Book	1 0 0
Club Badges	4 0 0
	<u>31 0 0</u>

£1,650 16 10

ADVENTURES AMONG BIRDS*

By A. S. CHALK

Anyone who has taken an interest in wild birds during many years is bound to have had, from time to time, various unusual experiences. It matters little, in this respect, whether you are an expert or just an "ordinary" bird-lover—you have the same chance of seeing curious developments, or at any rate having interesting experiences, that may not befall anyone else.

In these remarks I propose to give just a few examples of odds and ends of experiences that have come my way while watching birds in various parts of Victoria.

Some twenty years ago, while exploring in a "flattie" an Ibis rookery on Reedy Lake, Kerang, I was able to observe the methods adopted by the young of the Little Pied Cormorant to evade possible capture. The birds were nesting in considerable numbers in small green eucalypts in a corner of the lake, where the water may have been two or three feet deep. As our party paddled under the trees, which each contained several of these nests constructed of gum-leaves and twigs, the tiny unfledged nestlings tumbled over the side of the nests into the water beneath, making scarcely a splash in the process. Then they disappeared, probably to come to the surface later to breathe as usual with only the tip of the beak exposed, in a spot well covered with aquatic plants, where detection would be most difficult. Whether the young birds performed this feat of their own initiative, or at the bidding of their raucous-voiced parents, which were flying overhead at the time, is a matter for speculation. Another query that arises is, How did these very young birds regain the sanctuary of the nest? Were they carried back by the parents? I am inclined to think so.

How a domestic cat enabled me to procure my only specimen of a Banded Landrail's egg may be of interest. Apparently, the bird had been taken as it was sitting on the nest, and the cat, having brought the prey home before eating it, left as evidence of her depredation a heap of the rail's feathers, together with an unbroken, prettily-marked egg. The same cat also furnished me, one evening just after dark, with a fine specimen of an Owlet-Nightjar, which was identified for me by Mr. Charles French, Junior, and it now rests in the National Museum, Melbourne.

That some unpleasant moments can creep into the career of an egg-collector is shown in the following experiences:

On one occasion, while climbing for a Crow's nest at Cranbourne, a schoolmate fell from high up in a tree and sustained severe concussion. He remained unconscious for some days, but eventually recovered. The episode, however, so impressed me and my associates—and also the schoolmaster—that "bird nesting" was taboo for many moons.

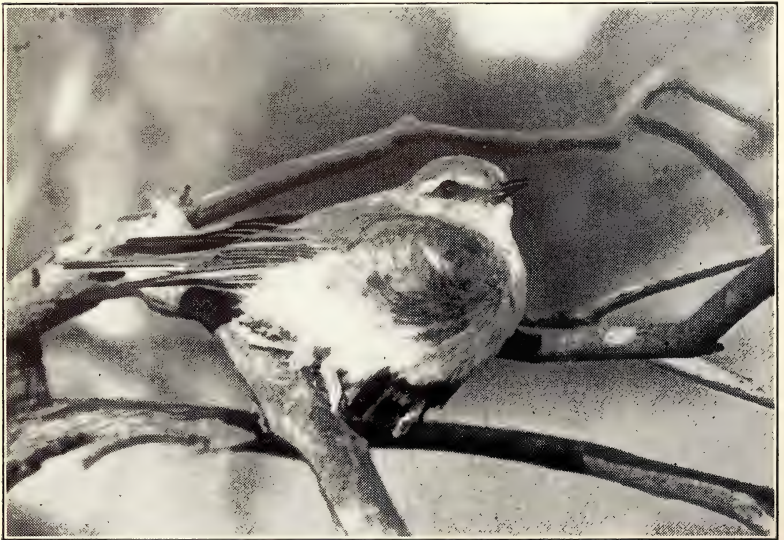
*Presidential Address to the F.N.C., June 10.

Plate VII



Lemon-breasted Flycatcher (*Microeca flavigaster*) screening its tiny nest with breast-feathers.

Photo. by W. G. and R. C. Harvey (Mackay, Queensland).



Brown Flycatcher, or Jacky Winter (*Microeca fascians*) also screening its tiny nest with the breast-feathers.

Photo. by K. A. Hindwood (Sydney).

On another excursion, a companion had a bad fall through a limb breaking, and he, too, sustained concussion which necessitated his remaining in hospital for over a week. This accident was caused through his trying to reach a Babbler's nest.

While trying to secure the dark-brown eggs of the Rufous Whistler, still another boy put too much of his weight on a thin limb, resulting in his coming to earth faster than was good for him and spraining his ankle so badly that I, his mate, had to carry him on my back for miles through the bush to the township, where he was put to bed for some weeks.

One day, my brother, in trying to reach the eggs of a Rosella that had nested in a cavity in the trunk of a huge gum tree, got his arm caught in the small entrance to the cavity, and was for a long time in a perilous plight. Eventually he extracted the arm, minus much skin and with much bruising.

That disturbing a nest of fully-fledged young White-backed Magpies can bring speedy retribution on the intruder, was made abundantly clear to me one day, when some twenty or more infuriated old birds, after hearing the alarm given by the squalling youngsters, came to the rescue. They attacked me from all directions at once, causing me to regret even having peered into the nest, and to understand that, when magpies attack in company, as they did on this occasion, there is a real danger of losing one's eyesight, not to mention a fair amount of blood and skin.

Going to a Reed-Warbler's nest on one occasion, expecting to find a clutch of fresh eggs, we found, instead, a tiger snake in possession. After being struck at with a stick, the snake dropped into the water, and thus caused the "egggers" (who were in their "birth" clothes) considerable anxiety as to its whereabouts! Whether the snake ate the eggs or not, could not be ascertained, but the nest some days previously contained one egg.

A great invasion by Wood-Swallows occurred in Victoria in the summer of 1896-7, or perhaps it was the year before. Three species came down in countless thousands—the Dusky (which still visits us every season), the White-browed, and the Masked Wood-Swallows. The air fairly resounded from daylight until dark with their assertive calls. Their nests were to be seen almost everywhere; no attempt was made to place them in safe or inconspicuous spots. Every child in my area had a good collection of their varied patterned and tinted eggs. Never since has such a vast assemblage of these birds been seen in the Berwick-Beaconsfield district.

In that same year, also, the Noisy Friar-Bird, with his guttural voice, appeared in considerable numbers in the districts mentioned. Rarely, if ever, is it seen there nowadays.

Starlings first appeared in that locality in 1898. Up till then, great numbers of Eastern Rosellas frequented the open forest

country, and their nests were to be found in almost every tree with a hollow or cavity; but, since the advent of the starling, they have gradually disappeared, until to-day only a few pairs may be seen in traversing the same country, which, it must be said, is not now so heavily timbered.

The frequent destruction of birds' nests by other than human agency is an interesting problem. I have frequently seen the nests of such birds as the Grey Fantail, Robins, English Thrush, and others tipped over, or partly pulled to pieces, with the eggs lying broken on the ground beneath. This vandalism is ascribed by many bird-men to the Ringtailed Possum, and I am inclined to agree that he is the culprit.

The "toll of the road" is a modern development. While on a car tour some years ago, I counted 68 birds that had been killed by cars on the highway between Melbourne and Eden (N.S.W.). The chief victims were Magpies, Kookaburras, Parrots of various kinds, and Noisy Miners. It would appear that most of these birds could have been spared by less reckless driving. Perhaps an appeal to motorists through the columns of their journal would do some good in this respect. It seems as if birds are unable to detect the fact that a car coming on in the same straight line is really moving towards them, until it is too late. Whatever the cause, drivers could easily show more consideration for our feathered friends, which help so much in the battle with insect pests. (See "The Toll of the Road," by Blanche E. Miller, *Vic. Nat.*, April, 1935.)

I appeal to Club members to use all their influence and efforts in endeavouring to have more small local sanctuaries proclaimed in the vicinity of country towns, where the native trees and shrubs may not be cut down, and thus preserve the natural habitat for many species of native birds that are peculiar to that particular district, and which otherwise are likely to disappear. An example is the Crested Bell-Bird, which formerly was fairly plentiful in Central Victoria, but now is not often seen there on account of the removal of the timber from the Crown lands in those districts.

A NESTING ODDITY

Custom cannot stale the infinite variety of the oddities associated with birds' nests. Mark this curious little discovery in connection with one of the Flycatcher groups.

Some years ago Messrs. W. G. and R. C. Harvey, of Mackay (North Queensland) photographed a Lemon-breasted Flycatcher (a close relative of the familiar Jacky Winter) at its tiny nest. On developing the plate, they were astonished to find that the nest had disappeared—it had been covered up by the breast-feathers of the brooding bird just as the photograph was being taken.

Now the same oddity has been recorded for the Brown Flycatcher (Jacky Winter) by Mr. K. A. Hindwood, of Sydney. Illustrations of the curious practice (which could occur, of course, only in respect of very small nests) are given in this issue.

THE AUTUMN GREENHOOD

By W. H. NICHOLLS, Melbourne

Pterostylis obtusa, R.Br., the Autumn or Blunt-tongue Greenhood, is distributed throughout the forest lands of Queensland (South), New South Wales, Victoria and South Australia. Rodway¹ records it for Tasmania, but it is now generally recognized that the form found there is Rogers's *Pt. decurva*, which in a dried state is sometimes difficult to distinguish from *Pt. obtusa*; but the former possesses longer points to the segments, chiefly the labella one.

Pt. obtusa is indeed a very variable species, far more so than is generally supposed; hence, confusion in respect to some variants arises now and then. Then again in some mountain resorts—Macedon, for instance—the latter end of *decurva*'s period coincides with the beginning of *obtusa*'s, hence hybrid forms occur; but fortunately they are of rare occurrence.

Robert Brown's type locality is "Port Jackson."

Pt. obtusa is surprisingly variable in New South Wales also, and is often, but not always, wholly a pleasant shade of green, without other colour markings; but in the Glenbrook district a form is found which may well be considered the most attractive. Whether it is *consistently* distinctive or not I cannot say; anyway, I doubt that it is so. It comes from Mr. G. V. Scammell, of Sydney.

The stem-leaves are exceptionally well developed, the galea nicely formed, and the labellum long, for it protrudes beyond the sinus of the conjoined sepals, though not to such extent as in *Pt. decurva*; but this is often noted in otherwise quite typical *obtusa* from other districts also.

The dilated petals are a tawny shade of brown, in pleasing harmony with the green of the striæ.

R. D. Fitzgerald illustrates, in one of his unpublished plates, another and very robust form of *Pt. obtusa* (habitat, Guy Fawkes, N.S.W.). The flower, according to the aforesaid plate, is as large as the normal *Pt. grandiflora*, R.Br. In this large form the labellum is comparatively long also.

In the Report² on these plates (which are in the Mitchell Museum, Sydney) this particular plate is given as No. 63, and is referred to as representing "probably an undescribed species . . . approaches *Pt. obtusa*, R.Br., but has a different labellum."

It, however, approaches very closely the Glenbrook specimens, even to the labellum, differing only in the shape of the cauline leaves. But, as most of us are aware, in this respect also *Pt. obtusa*'s stem-leaves vary from the mere bracts to largish ovate leaves (see *Vic. Nat.*, xlv, p. 45, 1928). Broad-lanceolate leaves on the stem, by the way, are a very common occurrence in *Pt. obtusa*.

Recently³ in this journal J. Ros. Garnet, a well-known and

painstaking worker on our orchids, published the description of a supposedly "new species of the genus *Pterostylis*, R.Br.," e.g., "*Pt. alveata*" (habitat, Little Snake Island); also a plate of figures representing the characters. Figure B of this plate shows the labellum-apex as minutely emarginate. In the accompanying letter-press referred to as "bluntly pointed and usually minutely bifid." In a later issue several specimens of "*Pt. alveata*" are shown.⁴ (There is a co-type with dissections in the National Herbarium, Melbourne.) These appear to be aberrant forms.

Mr. Garnet recently forwarded to me a small specimen of a *Pterostylis*, but included no data. This specimen agrees with specimens received later from his type locality. After examination this specimen was included among other material and there labelled "*Pt. obtusa*—no data."

I have also secured material from Little Snake Island through the kindness of Mrs. Rossiter (mother of Miss Elèse Rossiter). Unfortunately, I cannot discover any marked feature in these specimens which could serve to separate it from R. Brown's *Pt. obtusa*.

In my opinion, therefore, Garnet's *Pt. alveata* is not a good species.

All my specimens from Snake Island were wholly a pleasant verdant-green, and under 12 cm. high, thus coinciding with small specimens found by E. H. Homann at Shallow Inlet, which specimens are undoubtedly the product of sandy places, or from dry and exposed positions. The slight variations noted in the labella can be assigned as "individual variations."

Differences in the height of specimens matters but little, unless a consistent characteristic. Snake Island specimens vary, in this particular, as much as do specimens collected elsewhere. This is apparent in the reproduction already alluded to (*see reference 4*).

(For further references to *Pt. obtusa* see *Vic. Nat.*, xlv, p. 45, 1928.)

References

1. *Tas. Flora* (1903).
2. By R. S. Rogers of Adelaide, S.A.
3. Oct., 1939, Vol. lvi, pp. 91-94.
4. Jan., 1940, Vol. lvi (opp. p. 139), pl. X.

GARDEN IN A VALLEY

Miss Jean Galbraith, a country member of the Field Naturalists' Club, has written a little book called *Garden in a Valley* (published by the Horticultural Press at 2/6), and in so doing has rendered a service to lovers of trees and flowers and birds. All of the essays are written quietly and sympathetically, and in general the booklet is a tonic against events of the day. Indeed, we may say of such a publication: "So shines a good deed in a naughty world." As Mr. E. E. Pescott suggests in his Introduction; readers will find it difficult to say which chapter appeals most, but many will discover a preference for the one in which "the trunks of mountain grey gums rise, columnar and pale, to some invisible height above the musk and ferns."

A NEW *DIURIS* OF THE INLAND

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

D. Colemanæ, sp. nov.

Planta gracilis, 20-35 cm. alta: folia plerumque 2, linearia, 13-20 cm. longa. Flores 2-6, graciles, aurantiaci cum notis purpureis fuscique. Bracteae floreae aliquantum magnae longaeque, sed variables. Sepalum dorsale latum, 8-10 mm. longum: sepala lateralibus fuscoviridia, angustissima, 3-4½ cm. longa. Petala unguiculata, 9-11 mm. longa. Labellum 2 jugis longitudinalibus praeter lobos laterales extendentibus: lobi laterales saepe latissimi, plerumque marginibus extremis crenulatis: lobus medius prope rhomboidalis, sed aliquantum oblongus. Columnae alae variables, plerumque breves.

A slender plant, 20-35 cm. high, usually with 2 linear leaves shorter than the scape. Flowers slender, 2-6, orange, with purple and brown markings or suffusions, chiefly about the lower parts of the labellum. Floral bracts sometimes very large, but variable in this respect. Dorsal sepal rather broad, 8-10 mm. long; lateral sepals dark green, very slender and long, up to 4½ cm. Petals not much longer than the dorsal sepal, on a dark slender claw varying in length. Labellum with 2 longitudinal ridges extending beyond the junction of the lateral lobes. Lateral lobes variable, but never narrow, sometimes broader than long; usually with the outer margins more or less crenulate. Mid-lobe somewhat rhomboid, but occasionally merely broad-lanceolate. Wings of the column variable in length, never quite as high as the anther, often short and blunt.

As will be gathered from this description, several of the different parts of the flower vary so considerably (even in flowers on the same plant), that it is not surprising to find that this *Diuris* has been collected for many years under several names. In the New South Wales

Diuris Colemanæ, sp.
nov. (slightly less than
natural size).

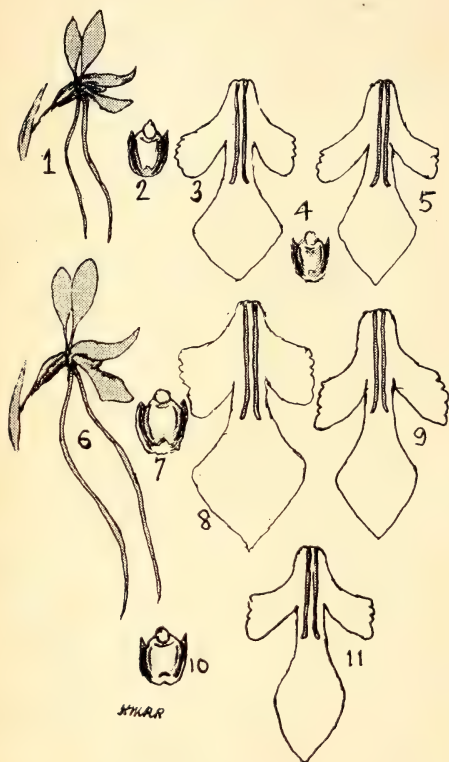
H. M. R.



National Herbarium there were specimens labelled *D. Sheaffiana*, *D. tricolor*, and *D. secundiflora* (all Fitzgerald's species). Superficial resemblances to all three can be discerned; but a critical examination of a number of flowers from various localities proves beyond doubt that it is quite distinct from any of them. In

D. Sheaffiana, the dorsal sepal is densely spotted, the lateral sepals are only about twice as long as the dorsal, and the mid-lobe of the labellum is broader than long. In none of these features does the present plant coincide. In *D. tricolor* (which the writer has twice collected himself), again the lateral sepals are too short, while the whole contour of the labellum is different. This last point applies equally to *D. secundiflora*, which has a fan-shaped labellum with very small lateral lobes: moreover, there seems to be no tendency whatever for the new species, in any locality, to have its flowers "second" (i.e., arranged all on one side).

D. Colemanæ would appear to have been first collected by the late Ernst Betche at Girilambone, western N.S.W., as far back as 1886. There are also specimens in the National Herbarium at Sydney collected by the late J. L. Boorman at Peak Hill in 1906 and at Dubbo in 1907, and by the present writer at Warialda in 1906 and again in 1916. In 1933, Mrs. Edith Coleman, the well-known Victorian



Diuris Colemanæ, sp. nov.

- 1, 2, 3. Flower (side view), column (front), and flattened-out labellum of a Girilambone plant.
- 4, 5. Column and labellum of a Dubbo plant.
- 6, 7, 8. Flower, column and labellum of a Ganmain plant.
9. Labellum of a Warialda plant.
- 10, 11. Column and labellum of a Peak Hill plant.

Flowers almost natural size, the other figures considerably enlarged. The Ganmain flowers are larger than the others.

naturalist, sent me some specimens collected by Mr. C. Boase at Ganmain, in the Riverina district; and at her request Mr. Boase forwarded further material. At that time the colour-scheme of the flower disposed me to favour its determination as *D. tricolor*; but Mrs. Coleman's arguments convinced me that this was wrong, and a subsequent inspection of Fitzgerald's plate showed that the labellum was radically different.

The problem, however, was allowed to remain in abeyance until recently, when I was asked to undertake the revision of the Orchidaceae in the National Herbarium at Sydney. There I found the specimens mentioned above; and upon informing Mrs. Coleman that I proposed to try to reach a definite conclusion about this plant, I received from her all her Ganmain specimens and dissections, which of course provided most valuable help. It is therefore with great pleasure that I venture to attach to this attractive *Diuris* the name of one whose contributions to Australian orchidology are so well known and so highly appreciated.

D. Colemanae is essentially an inland form. Since it occurs in Riverina, it should be looked for in northern and north-western Victoria: while its presence in the Warialda district suggests an extension of the habitat into southern Queensland. The actual records are all in New South Wales, *viz.*:

Girilambone, Oct., 1886 (E. Betche): Peak Hill, Oct., 1906 (J. L. Boorman): Warialda, Oct., 1906 (H. M. R. Rupp): Dubbo, Oct., 1907 (J. L. Boorman): Gunyerwarildi, N.W. of Warialda, Oct., 1916 (H. M. R. Rupp): Ganmain, Oct., 1933 (C. Boase).

EXCURSION IN NATIONAL MUSEUM

A most interesting excursion in the National Museum, under the guidance of Mr. A. S. Kenyon, an ex-President of the Club, was held on June 29.

There has recently been added to the numerous sections of the Public Library, Museum and National Gallery a Department of Antiquities. For no particular reason, certainly none of association, it has been linked with the national coin and medal collection and placed under the control of Mr. A. S. Kenyon, well known to most of us, who is Numismatist and Keeper of Antiquities.

The new Department has a wide range. Its avowed object is the display of all objects which serve to demonstrate the evolution of the human being from the world of beasts, his religion, his art, his inventions, his artifices, and generally what is known as culture. For Museum purposes the term antiquity is taken to include periods up to and including the seventeenth century. Besides the general run of objects of the old and new Stone Ages, terms now becoming obsolescent, the bronze and iron periods, there are some special features, the principal being the Egyptian room, where there are several mummies—ibis, cat, crocodile, as well as human—a number of stelae, many ushebti and other funereal objects, as well as the mummified head of a princess with bobbed auburn locks, and a Pharaoh's legs. The contents of the room are reckoned to be worth over £25,000.

There are also many Egyptian treasures in the Gallery itself, which is separated from the Egyptian tomb by the Damascus room, with its mediaeval gesso-painted walls and its cupboards full of domestic treasures and its Saracenic hanging lamp.

THE VICTORIAN COMB FERNS

By N. A. WAKEFIELD, Genoa, Victoria

Recently, observation has been made of numerous examples of our two Comb Ferns, *Schizaea bifida* and *S. fistulosa*; and in the latter, a variation has been noted which necessitates an amendment of the descriptions and keys given in our standard references.

Examples of this species have been found, which show some of all the fronds bifid. In Part I of *Flora of South Australia*, J. M. Black mentions a bifid specimen of *S. fistulosa*, but otherwise the feature seems to have escaped notice, and all such specimens are keyed as *S. bifida*. In East Gippsland, *S. fistulosa* has a spike shorter but broader than in the type form, thus approaching closely its variety *australis*, figured in *New Zealand Ferns* by H. B. Dobbie.

*S. bifida.**S. fistulosa.*

A suitable key to the Victorian species is:

Fronds undivided, bifid, or dichotomous; barren fronds present; all stalks rough: *S. bifida*. Fronds undivided or bifid, all fertile except in young plants; all stalks smooth: *S. fistulosa*.

S. bifida, the Forked Comb Fern, is generally densely tufted, with short, much divided barren fronds, which are much exceeded by the somewhat less divided fertile fronds. All stalks are rough, with numerous forward-pointing white prickles. Plants of this species with undivided fertile fronds are distinguished from *S.*

fistulosa by the presence of divided barren fronds and by the rough feel of the stalks. In his *Key to Victorian Plants*, Baron F. v. Mueller put this species as a variety of *S. dichotoma*, which is not Victorian, and is distinguished by its larger, more divided fan-like fronds with generally more than a score of heads. In this species, too, the stalk is rough.

S. fistulosa, the Comb Fern, is less tufted, with several simple or bifid fertile fronds, and none barren except in young plants or where the young heads have been damaged and hence are not developed. All stalks are perfectly smooth. The type form has soriferous heads about an inch long, and very narrow, and with less hairy segments than in *S. bifida*, but these features are too variable in Victoria to be of importance.

Both species are abundant on the Grasstree Plains by the lower courses of the Snowy, Bemm, Cann, Thurra, Wingan and Genoa Rivers in Croajingolong; but they often escape notice because of their small size and rush-like appearance of the plants.

The accompanying illustration shows their quaint habit; and shows, in the centre specimen, branching fronds of *S. fistulosa*. The three plants were growing almost together on a flat by the Wingan River.

THE HEALESVILLE SANCTUARY

An impression appears to have got abroad that the Sanctuary at Badger Creek, Healesville, is to close down owing to lack of patronage. This belief is erroneous. The Trustees of the Sanctuary have no intention of closing the gates to the public.

It is true, however, that patronage has fallen away considerably in recent weeks. Clearly enough, this is due to the strain of wartime—to the “competition” of military camps, for one thing, and to the increase in the price of petrol. Nor will the situation be improved when rationing of petrol is introduced.

In the difficult circumstances, the Trustees have regretfully had to reduce the staff at the Sanctuary and to take other measures in the interests of economy. Some birds and mammals have been released into the adjacent bushland, and it may be necessary later to set some others at large. Meanwhile, however, all the most valuable specimens are being retained, and the strain of keeping them in good health is being reduced by donations of food from public-spirited citizens.

Further support in this respect would be appreciated. The Director (Mr. David Fleay) states that what he desires most is pollard, crushed maize, parrot seed, etc. The donation of animals that would serve as food for the eagles and other carnivorous creatures would also be welcomed.

It should be recalled that the Sanctuary relies for its support entirely on the public. It does not receive a Government or municipal grant of any kind, despite the fact that it is outstanding among institutions of its kind in Australia.

A.H.C.

“ROVING CORAL SEAS”

Members of the Victorian Field Naturalists' Club enjoyed a very pleasant and enlightening evening at the National Herbarium on June 24, when Mr. T. C. Marshall, ichthyologist of the Queensland Museum, showed a colour-film entitled “Roving Coral Seas.” The scenery, birds, fish, etc., shown in the film are very beautiful, and considerable interest attaches also to the native dances and other features of aboriginal life. All members of the audience (a large one) greatly admired the film. A collection taken up for the Red Cross returned £8/5/6.

SAFEGUARDING THE BUSH

A few weeks ago (towards the end of May) a Decentralization Conference, representing a considerable number of country municipalities, met at Castlemaine. To that Conference the then President of the Field Naturalists' Club (Mr. A. S. Chalk) addressed a special appeal, which was received by the delegates and referred to the Executive for consideration. A copy of the letter was sent to the Forestry Commission, which gave it cordial approval.

The letter is as follows:

We desire very much to bring under the notice of delegates to your Conference the urgent necessity of taking action to safeguard the vanishing Bushlands of Victoria. We suggest that this matter should be of vital concern to a Decentralization Conference, since it affects the welfare of the State in general and rural areas in particular.

It is inevitable that, in the progress of settlement, much of the original forest areas should be swept away. We think, however, that the process has been too rapid and too careless during many years, and we think that, even to-day, there is need for much greater care. Wood-cutters should be controlled more closely. Their axes wrought havoc in many Bush areas during the recent coal strike. Not only do they fell trees, but they cut down almost every stump, and thus various valuable species of native birds, such as thrushes and crested bell-birds, are left without any nesting-sites. Similarly, eucalyptus-cutters destroy all the young growth and rob various honey-eating birds and tits of their nesting-places. You will surely agree that it is idle to protect native birds from shooters and then deny them any facilities for nesting. We have seen many cases in which young birds were left to starve to death through eucalyptus-cutters destroying the covering from the nests and driving away the parent birds.

Imagine what the famous countryside of England would be like if indiscriminate slaughter of this kind—the ruining of forests—were permitted. We in Australia should build up a countryside no less distinctive than that of England. But we can only do it by the exercise of a patriotic spirit. We suggest, therefore, that all municipal councils throughout Victoria should take action, in conjunction with the Forestry Department, to endeavour to preserve what remains of the forests in their respective areas. We think that trees should be preserved as far as is possible, that stumps should be left as nesting-places for birds (some of which are amongst the most distinctive in the world), that sucker-growth and general undergrowth should be safeguarded in some places in the interests of smaller birds, and that careless persons should be prevented from using Bush areas near towns as dumping-spots for old tins and other rubbish.

A picturesque Bushland is one of the best assets that any country centre can possess. Ararat has proved this through its Nature Park, a reservation near the town that attracts many visitors from the City. Many other country towns, we think, should have reservations of a similar kind.

I have to add that if the Field Naturalists' Club of Victoria, which includes among its members many competent botanists and bird-students, can be of any assistance to municipalities in the direction indicated, we shall be glad to help in every way possible.

May I suggest, finally, that your delegates make a note of the substance of this letter and, on return to their respective homes, discuss the matter with their colleagues in the interest of the future of Australia.

Field Naturalists' Club of Victoria

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EXCURSIONS

SATURDAY, JULY 20.—Zoology School, University. Leader: Prof.
W. E. Agar, M.A., D.Sc., F.R.S., O.B.E. Subject: Zoology. Meet
at the School at 2.30 p.m.

SATURDAY, AUGUST 3.—Melbourne City Streets. Subject: Build-
ing Stones. Leader: Mr. A. C. Frostick. Meet at the G.P.O.,
Elizabeth Street, at 2.30 p.m.

Museum Lectures during the month include the following:

July 6: "The Coins of Scotland and Ireland," by A. S. Kenyon.

13: "Gippsland Beginnings," by C. Daley.

20: "Halcyon Days of Greek Culture," by A. S. Kenyon.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

VICTORIAN SEA SHELLS, by C. J. Gabriel, describing 150 shells, all to be found in Port Phillip, is abundantly illustrated. Price, 1/6.

A CENSUS OF VICTORIAN PLANTS, by the Plant-names Committee of the Club, contains the vernaculars of all our plants. Price, 3/6.

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LOWNE: *The Blowfly* (Anatomy, Physiology, Morphology and Development), 1890-92, 2 vols., £2/7/6.

VESEY-FITZGERALD: *A Book of British Waders*, new, 8/6.

MOGGRIDGE: *Harvesting Ants and Trapdoor Spiders*, with supplement, 1873, 14/6.

HANSEN & SORENSSEN: *On Two Orders of Arachnida*, 1904, £1.

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LE SOUEF & BURRELL: *The Wild Animals of Australasia*, 20/-.

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AUGUST, 1940

THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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1940

Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, AUGUST 12, 1940

1. Minutes.
2. Subject for the Evening: "A Night with Birds." (Mr. Gregory Mathews will be present, and special motion pictures and lantern slides will be shown).
3. Correspondence and Reports.
4. Election of Members.

AS ASSOCIATE MEMBER.	PROPOSER.	SECONDER.
Mr. B. M. Sloggeth, 147 Hawthorn Road, Caulfield, S.E.7.	Dr. C. S. Sutton.	Mr. G. N. Hyam.
5. Nominations for Membership.
6. General Business.
 - (a) Forthcoming Excursions.
 - (b) Wild Nature Show Proposal.
 - (c) Questions by Members.
7. Remarks by Exhibitors.
8. Conversazione.

The Victorian Naturalist

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No. 680

PROCEEDINGS

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday, July 8, 1940. The President, Mr. L. W. Cooper, presided, and about 100 members and friends attended.

APOLOGIES

Apologies for non-attendance were received from Messrs. E. E. Pescott, V. H. Miller, S. R. Mitchell, and F. S. Colliver.

SUBJECT FOR THE EVENING

This was an illustrated lecture on "The Grandeur of the Grampian Mountains," given by Mr. Gilbert Rogers, Tourist Officer at Hall's Gap. A fine series of photographs, shown by the epidiascope, together with a running commentary, gave members a good idea of this Victorian wonderland. The President expressed the thanks of the Club to Mr. Rogers.

BUSINESS FROM MINUTES

(a) Wild Nature Show. Moved by Mrs. Barrett, seconded by Miss Wigan, "That we do not hold a Wild Nature Show this year." After discussion by various members the motion was put to the meeting and declared lost. It was agreed that the nature of the Show be left to the Committee to decide.

(b) Number of Excursions. It was agreed, on the motion of Mr. H. P. Dickins, seconded by Mr. P. C. Morrison, "That the previous motion for two excursions per month be rescinded, and that the new list be left to the discretion of the sub-committee."

REPORTS OF EXCURSIONS

Excursions were reported on as follows:—National Museum, Mr. L. W. Cooper (for Mr. A. S. Kenyon); Melbourne University (Agricultural Department), Mr. L. W. Cooper (for Miss J. W. Raff).

GENERAL BUSINESS

(a) Donations.—Gifts of books for the Club Library were received from Mr. C. Barrett and Mr. E. E. Keep. The President expressed thanks to these donors.

(b) The Assistant Secretary announced that Mr. Noel Lothian had enlisted in the Army Medical Services.

ELECTION OF MEMBERS

The following were duly elected:—As Ordinary Member: Miss Elsie M. Parsons; as Country Members: Mr. Nigel Gibson, Mr. Charles Burley; as Associate Members: Miss Margaret Savill and Mr. G. I. Dundas.

EXHIBITS

Mrs. J. J. Freame:—Marine biological specimens.

Mr. C. J. Gabriel:—Marine shells, from North Queensland.

Mr. Chas. French:—Two rather rare Victorian Orchids, viz., *Pterostylis grandiflora* (Long-tongue Greenhood), and *Pt. obtusa* (Blunt-tongue Greenhood); collected near Gembrook, 7/7/40.

Mr. Lloyd Williams:—About 80 species of pressed Orchids from the Grampians.

ORCHIDS RECORDED FOR EAST GIPPSLAND

By N. A. WAKEFIELD, Genoa, Victoria

During 1938, the orchids recorded for East Gippsland were listed in the *Victorian Naturalist*, as follows:

1. *The Orchids of Orbost District*, by Frank Robbins (Vol. LV, p. 108).
2. *Further Notes on Orchids of Orbost District*, by N. A. Wakefield (Vol. LV, p. 129).
3. *List of Orchids Recorded for East Gippsland*, by W. Hunter (Vol. LV, p. 138).

In the second paper, "*Prasophyllum odoratum*" should read "*Prasophyllum patens*," and "*P. robusta*" should read "*P. alata*." The *Pterostylis obtusa* there mentioned is the small coastal form which has recently been described as *Pterostylis alveata* Garnet.

In the third paper, Mr. Hunter mentions *Calochilus cupreus*, *Caladenia Menziesii*, *Pterostylis curta* and *P. acuminata* as recorded by Mr. Robbins for Marlo. These, however, are Orbost records; and, as far as is known, none of them occurs at Marlo. (See *Vic. Nat.*, Vol. LV, p. 110, line 40.) In the latter part of this paper six species are listed as doubtful records; but all these have since proved authentic.

Recent additions to our list for East Gippsland are:—*Prasophyllum Hartii*, Bairnsdale, 1938, W. Hunter; *P. gracile*, Bairnsdale, 1938, and Suggan Buggan, 1939, W. Hunter; *Thelymitra media*, in the hill-forest areas as at Combienbar; *T. Matthewsii* (= *T. D'Altonii*), a single specimen at Genoa, 1939; *Spiculae Huntiana*, a large colony in sandy soil about five miles north of Orbost, by the old Bendoc coach road, 1938; *Pterostylis reflexa*, in moist soil on granite ridges of Mount Raymond near Orbost, and Mount Kaye near Cann River, 1939 and 1940.

A CURIOUS GREENHOOD

I found a peculiar specimen of the Banded Greenhood (*Pterostylis vittata*) at Frankston in June. I take it that it was a "freak," but I thought that it may be of some interest to some members. It had four flowers which, instead of being the usual colours of brown and green, were all a pure cream. The plant seemed quite healthy except that the flowers were a trifle smaller than usual. There were ten leaves on the stem, four of which were cream with a deep green stripe through them, the other seven being plain cream.

A. K. FAIRHEAD.

THE BARKING OWL MYSTERY

By DAVID FLEAY, Director of the Healesville Sanctuary.

The Winking Owl (*Ninox connivens*) of Check-lists and bird books is the Barking Owl of these observations. The bird does not blink or wink any more than any other Australian Owl, but its usual call-note is very definitely a gruff, low-pitched, and almost explosive double bark, so much like that of a dog that one could be excused for forming incorrect conclusions.

Widely spread over Australia but sparse in its distribution, this little-known species is the most handsome of the genus *Ninox*, and, for its size, it is one of the fiercest hunters among our Owls. Although at times the Barking Owl dwells and nests in the larger scrubs and fairly dense forest (I observed some feeding young on the Gibbo River, between Benambra and Corryong, Victoria) the bird is more typically an inhabitant of the open country with its scattered timber clumps and also of watercourse timber. Northern Victoria, along the Hume Highway from Seymour to Wodonga, represents typical country of *Ninox connivens*.

Being most interested in Owls, and especially in their night cries, I have always been attracted by the speculations and arguments concerning the blood-curdling screams that have startled nocturnal wayfarers in many parts of Victoria and other States. In the forested range country of Gippsland and Southern Victoria generally there is no doubt that the large Powerful Owl is usually responsible for these scares. But what of the many "screaming women" reports that came in from the Wimmera, the Murray River areas and towns scattered through Northern Victoria? The Powerful Owl is not found in these areas—they are totally at variance with the dark, secluded gullies and dense timber environment of that eagle-like but very shy bird.

However, the Barking Owl is certainly found through the northern part of Victoria. It is closely related to the Powerful Owl, resembling it in general appearance, and though not so large it is nevertheless a big and sturdily-built bird.

With some knowledge of these facts, and having seen a good deal of the Barking Owl in nocturnal wanderings in many parts of Victoria, particularly in the Stony Rises of the Campbelltown area, I developed a strong suspicion that this so-called Winking Owl was somewhat of a "dark horse." Obviously, there was only one way to get to the root of the matter and find out whether this was the northern "Screaming Woman." That was to establish and observe several of the birds over a lengthy period in captivity.

The search was fraught with difficulty and disappointments. Beginning in 1929, the birds were watched at Campbelltown, Shepparton, Nathalia, and on the Gibbo River. The only one secured was a badly injured adult bird, which was found by Mr.

A. J. Down, spiked on a barbed-wire fence of the Violet Town district. However, in 1937 a chance meeting with Mr. J. R. Goodisson, of Glenroy Estate, near Womboota (N.S.W.) resulted in a complete change of fortune. For a number of years a pair of Barking Owls has made its headquarters in the scattered timber about the Glenroy homestead, on the comparatively bare plains of Womboota.

In the late Spring of 1937, Mr. Goodisson discovered their nesting site low down in the hollow trunk of a leaning grey box. The entrance-hole opened about seven feet above the ground and the three round white eggs were far down, practically at ground level inside. Some idea of this tree will be gained from the illustration. The hen Owl was particularly courageous in regard to her responsibilities. When torch-beams illuminated her from above she bristled, and glared balefully with great yellow eyes, but refused to budge from her nest on the decayed wood.

Mr. Goodisson maintained a careful watch on the birds and the tiny Owlets, covered in yellow down, distinguished themselves by hatching on Cup Day (November 2, 1937). The parents now strove most actively to drive nocturnal visitors away from their home site. They swooped repeatedly overhead on eerie silent wings, sometimes snapping their beaks in the typical manner of Owls and often uttering unearthly, hair-raising cries of a gurgling nature. These uncanny squeals were my first intimation of a new call—I had not heard it before and have not heard it since. It was an unpleasant sensation to "sense" rather than see these birds flying at one silently in the darkness, while their weird cries tended to make one's skin creep.

Having on several occasions suffered scalp wounds inflicted by both tame and wild Boobook Owls in defence of their young, I did not fancy similar treatment from birds with so much longer talons and much heavier striking force.

Mr. Goodisson had observed one of the parent birds roosting in foliage during daylight with a half-eaten ringtailed possum in its talons. This serves to emphasize the rather large game sought by the Barking Owl, which, unlike the Powerful species—almost entirely a hunter of furred game—takes both birds and mammals. I have known a Barking Owl, in the presence of abundant suitable food, to kill and devour in one night an adult tawny frogmouth. The species also preys on magpies. Mammalian victims include rabbits, rats, and young hares. The capture of comparatively large game is understandable when one observes the size and sturdy build of this Owl and the long, keen talons.

In December, 1937, the three Glenroy Barking Owlets were taken from their parents. They were then a little more than a month old and well fledged. One of the most distinctive features of these greyish Owlets at this age is the almost complete whitish

PLATE VIII



Golden-eyed, fluffy Barking Owlets, with Mr. J. R. Goodisson, of Womboota, N.S.W.



Site of nest of Barking Owls, Womboota, showing hollow entered by the birds. The actual nest is at ground level inside.

Photos. by David Fleay.

collar. At the Sir Colin Mackenzie Sanctuary these fluffy golden-eyed birds at once became a major attraction. They sat in a row in their small original aviary during daylight and in the usual playful manner of Owlets indulged in extraordinary contortions of neck and head. They wound their heads round and round at every conceivable angle, even upside down, in order to gain a thoroughly comprehensive survey of anything new. Whether it was a visitor, falling leaf, wandering emu or even a minute insect mattered not in the least. Those who have seen the large Healesville poster issued by the Victorian Railways will probably remember the picture of these three Owlet comedians perched across its top.

The voices of the immature birds were constant trilling calls, similar to but much deeper in tone than the shrill cricket-like calls of Boobook Owlets.

Voracious in their healthy appetites, Barking Owlets frequently gulped small rats and swallowed whole leg-bones of young rabbits.

In early winter the usual call-notes of the species were heard for the first time. This rapid double bark resembles "Woop-woop!" "Wook-wook!" or "Wuk-wuk!" according to the fancy of the listener. There is a very noticeable difference between the pitch of male and female voices, which is probably associated with the fact that the female is usually (though not always) a larger and stronger bird than the male.

The birds, which usually dwell in pairs in their haunts, begin their barking calls early in the evening, often before it is quite dark. At times during the night odd barking calls are again heard, but the most curious habit of all, which I have frequently noted while camped right below Barking Owl home-sites, is the farewell early morning chorus, uttered in broad daylight before the birds retire to a hollow or perch in foliage.

The calls of male and female form an alternating "quick-firing" accompaniment and are given with more vigour than those of any other night bird I have heard. The low-pitched, rather gruff "Wook-wook," of the hen bird is quickly followed by the higher "Wok-wok!" of the male, and so they continue until a sudden cessation is made. Though not heard at a distance it is noticeable at close quarters that these abrupt calls work up from peculiar growling notes resembling "Er-wook-wook!" until, following several repetitions, the fore-running growl is dropped and the clear double call is uttered more loudly. This chorus is almost an every-night event in the new and larger aviary built for these birds in the Sanctuary.

Little more of outstanding interest was noted in the voices of these birds during the rest of the 1938 season, though during November and December of that year a pair of the birds embarked on an unsuccessful nesting venture in a large hollow log hung in the aviary.

In the Spring of 1939, however, with a total of five Barking Owls in the aviary, a further attempt at nesting began. One of the additional birds was found slightly injured on Sir Brudenall White's property at Middle Creek and being interested in the "screaming woman" calls which are heard at times in this locality Lady White forwarded the Owl to the Sanctuary. In the period leading up to the laying of eggs the nocturnal calls of the nesting birds were redoubled and were also heard during daylight. The two birds "conversed" at times in a series of slow hoarse notes and cried out occasionally in a loud "Hoo!" which would cause any listener to look about to discern who had hailed him. Moreover, the Owls began to resent my intrusions and displayed hostility by swooping at me.

The hen bird commenced her incubatory duties on two round white eggs on September 1. She brooded very steadfastly, never being visible during daytime and very seldom at night. On October 10 (forty days later) it was found that a single Owlet, clad in the usual yellow down, was partly hatched. Unfortunately, it was dead and the second egg proved infertile.

By their actions a fortnight later it seemed that the birds might embark on a further venture, but no more eggs were laid.

Better results are hoped for in this season of 1940. Even as I write the same hen bird, which has laid exceptionally early this year, is brooding on a clutch of eggs. She sat on July 22.

The main point of interest, concerning the lesser-known cries of the Barking Owl, remains to be discussed. Only in the 1940 season, after $2\frac{1}{2}$ years, have these birds enabled me to be sure, from the indisputable evidence of several close-range nocturnal auditions, that this species is actually the "Screaming Woman" of the northern Victorian areas, where the cries have been so often reported. The fact that we have heard these screeches only on a limited number of occasions, and mainly in March and April of 1940, is interesting in bearing out the mysterious nature and rare utterances of such call-notes. Why the birds give these startling cries is another mystery, although it is worth bearing in mind that the little Boobook Owl, so similar in many respects to its larger relatives, has a clear sharp series of loud "Ow!" cries, usually but not entirely reserved for autumn and winter months.

Like the Barking Owl, the Powerful Owl rarely indulges in its blood-curdling cry. I have never heard it from a captive bird, but previous to its capture the specimen now in the Healesville Sanctuary once screamed as it flew low over my head.

One definite point is that screams appear to be uttered usually when the bird is away from its own actual territory. Again on July 30 I had an illustration of this when screaming notes, issuing from a pine tree on an open hillside above a thick gully, startled Mr. Frank Pollock, of Healesville. The Powerful Owl undoubtedly

responsible is normally heard "woo-hooing" in its usual double note from the lower bush.

The rarity of the screams of the Barking Owl is confirmed by field-notes of Mr. J. R. Goodisson, who, although he sleeps on an open verandah and has the parent birds constantly about his property, could count on the fingers of one hand the number of times he has heard these cries.

The cry itself is exactly what one would imagine a girl or woman to utter on perceiving some object inspiring abject terror. The scream is single, loud, and forcefully uttered, and on being heard at close quarters on a still night is calculated to make one's hair bristle. The cries may be repeated at intervals of ten or fifteen seconds or less or singly with minutes between each performance. There is no chorus of screams—simply the agonized rising high note as of some person crying in terror for aid. The cry is quite different from the note previously given by the parent Owls of Womboota when their nesting ground was visited at night.

Undoubtedly both Barking and Powerful Owls are birds with a wide range of notes, and it is undeniable that there is a striking similarity in these, particularly in the voices of the Owlets—the usual double note common call, the "conversational" notes and the scream.

The rare and startling screams are uttered during the depths of the night and evidently rarely at dusk. Considering that the Barking Owls of Healesville, although carefully watched, have seldom been heard, it is little wonder that speculation has long centred on this problem. Mr. A. G. Campbell and some other ornithologists favour the Sooty Owl, in preference to the Powerful Owl, as the "Screaming Woman." Possibly this bird may have a screaming cry but general observations of several other members of the genus *Tyto* indicate a marked similarity between their inoffensive rasping nocturnal calls.

It is also worthy of remembrance that bushmen who have shot Wailing Owls in the act of screaming, usually remark on a hawk-like appearance and on a degree of white and brown barring or streaking of the victim's breast feathers.

I have kept the Barn Owl, the Masked Owl, the large Tasmanian Masked Owl, the Boobook Owl, Barking Owl and Powerful Owl over a long period. Naturally, captivity does not provide ideal conditions, but when birds are comfortably housed, and fed naturally, so that they nest in their aviaries as all these birds but the Powerful Owl have done, they are also bound at some time or other to utter each and all of their respective call-notes. The Powerful Owl and the Barking Owl have convinced me that, contrary to the former general opinion, we actually have two "Wailing Woman" birds instead of one.

NEW SPIDER NOTES—INTERESTING DIMORPHISM

By EDITH COLEMAN, Blackburn

At Ringwood (8/4/40) my daughter and I found three beautiful golden snares of a large grey *Nephila*, of what appears to be an undescribed species. In each instance two small brown males were in attendance, providing, in shape, colour and size of the sexes an interesting example of dimorphism. A brief, tentative description follows:

Female: Abdomen satiny, slate-grey, protuberant with a white elliptical streak traversing the most prominent portion and down each side, fading towards the middle; Cephalo-thorax white with black blotches and spots; palps and mouthparts black; legs reddish with black hairs; the distended abdomen suggested imminent egg-laying.

The male wholly dark brown, the narrow-oblong abdomen and long legs giving an attenuated appearance.

Through the kindness of Professor Agar and Professor Hartung the two spiders illustrated were weighed at the Melbourne University. The weights were:—Female, 1.583 milligrams; male, 19 milligrams. It will be noted that the male has lost two legs. This probably happened while I was saving him from the fate of his co-partner in what seems a strange matrimonial alliance.

The two males associated with each snare were suspended by a few threads close above, or just below the female as she rested on her platform. At times they moved about, and over her, showing no signs of fear.

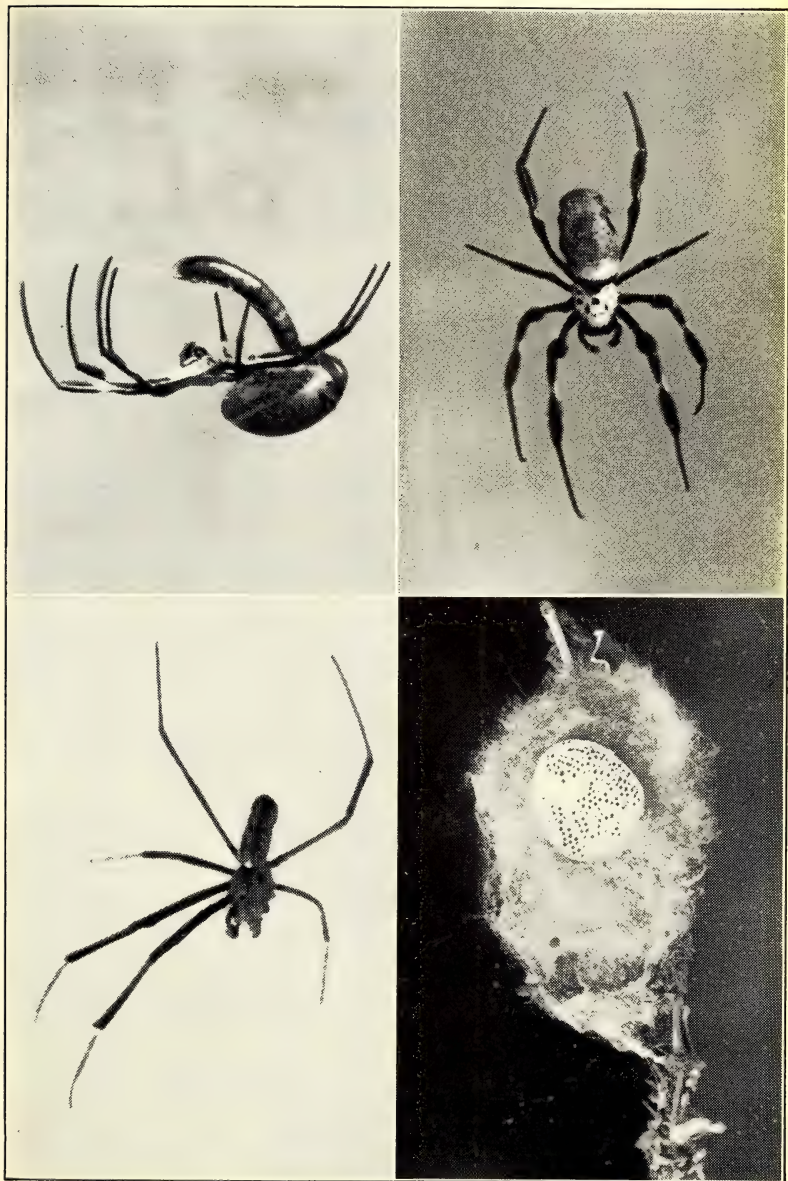
Conditions did not favour photography. I exposed one negative with a very poor result. It will, perhaps, serve to illustrate the notes that follow. Strings of silk, from 3 to 6 inches in length, in which were entangled the remains of many insects, made it evident that the snares had been in their present position for a long period. When examined later, wings of moths, butterflies, dragon flies, lace wings, the remains of male spiders and many flies were recognizable. They proclaimed the spider a friend of man in his attitude to insect pests.

It was difficult to correlate these strings of debris with the position of the snares, and to understand the meaning of many silk lines that formed an entanglement in front of and even behind the snares.

As it was not convenient for me to visit Ringwood for frequent observation, the spiders were brought to my own garden. Two of the females, with their attendant males, their strings of debris, and the silk from their despoiled snares, were hung on a large shrub. For closer observation the third "family" was enclosed in a glass cage 2 feet 6 inches square, roofed with mosquito wire, and with miniature "trees" in flowerpots to support the snare.

At 9 p.m. all the females were active. One of them made many attempts to deglutinate the silk of her mangled snare; but she

PLATE IX



Top left: *Nephila* spider before egg-laying. The meal-worm has been carried to her platform to be eaten at leisure. (Photographed on April 25). Top right: Female after egg-laying. (Photographed on May 10; she died on May 19). Bottom left: Male *Nephila*, enlarged nearly twice natural size. Bottom right: Egg-mass of *Nephila*, with flocculent silk opened out to show eggs. (Eggs deposited on April 23; photographed May 7).

either could not disentangle it from the strings of debris, or else found distasteful the talc powder with which I had dusted it before attempting to take the photograph.

At 11 p.m. all three females had constructed snares, not very symmetrical ones, probably because of insufficient silk. In normal circumstances the silk of the old snare is liquefied and swallowed.

While the females were working on their snares the males moved about them with what appeared to be a proprietary interest in the proceedings, although, in one instance, I was not certain that the correct partnership had been restored. The females worked very slowly—laboriously, so different from the vivacious movements of many garden spiders. Their great egg-burdens, doubtless, controlled their activity.

I watched the spinning on a number of evenings. In gathering in the old snare the central (non-viscid) platform was not removed by the spider but formed a point of anchorage for the new snare. As with so many other spiders, the viscid silk was deglutinated and swallowed. I netted Cabbage-white butterflies (so numerous at the time) and tossed them on the snares. These, and flies, were caught and carried to the old platform, showing clearly how the strings of debris had lengthened day by day. One of the females on the shrub constructed in front of her snare a complicated network of lines from twig to twig, and branch to branch. The second female made a less effective barrier, and, as this spider was missing one morning, it was assumed that she had been taken by a bird. The other remained unmolested, through heavy day and night rain, in a garden full of bold birds. It seemed certain that the silk network served as a barricade, similar to the black cotton entanglements that save our young peas from sparrows. This probably explains the network described in my paper on the Tailed Spider (*Vic. Nat.*, August, 1932).

The male spiders gradually disappeared. I saw the female in the glass cage eating one of her mates, and, next day, was just in time to save the one illustrated on Plate IX. Two of its legs appeared to have been lost in the rescue.

On the night of April 23 this female deposited her eggs in a flocculent mass of golden silk. The "cocoon" was camouflaged with butterfly-wings and leaves. She did not "brood" the eggs, as many spider mothers do, although she returned to them each evening, spinning a few threads about the "cocoon" before starting on a new snare. Although technically incorrect, I use the term "cocoon" in preference to either sac, or egg-bag. In this respect I find I sin in good company. The eggs are not enclosed in a sac. They are literally poured on to the soft silk, and are then covered with more flocculent silk.

The viscid fluid in which they flow does not even form a skin, as in the case of many other spiders. In drying the fluid contracts,

giving a honey-combed appearance to the great egg mass. Later, it becomes powdery, leaving the pink eggs distinct and separate. At a touch they would roll apart.

In the case of many garden spiders the fluid forms a skin, or film (like the skin on boiled starch) over the egg-mass. This dries and separates as the eggs develop, so that, even in these circumstances, "egg-bag" and "egg-sac" are inappropriate terms. Egg-deposit or egg-mass would perhaps meet the occasion, leaving the terms "sac" and "bag" for the closely woven cases that enclose the eggs of such species as the Huntsman, the Death's Head Spider, and others.

There is as yet no sign of hatching which will probably not take place until Spring. I have not yet counted the eggs, but, almost certainly, they run into hundreds. One wonders how many of the spiderlings that emerge will survive to adulthood. The number of male spider-remains in the strings of silk suggests that many more males than females survive to maturity.

I am greatly indebted to Dr. J. H. L. Cumpston, of Canberra, who directed me to authorities who have dealt with this group. Our spider-literature presents a formidable tangle, the unravelling of which calls for time as well as patience. I am also indebted to Mr. S. G. Butler, who kindly checked the generic name.

F.N.C. DIAMOND JUBILEE

Several minor corrections in "The Story of the Field Naturalists' Club of Victoria" (*Vic. Nat.*, May, 1940) are suggested.

Mr. R. H. Croll writes: "The bloke who was President in 1938-39 published only *one* volume of verse (he'd love to call it poetry) and an outdoors volume entitled 'The Open Road: Being the Ways of Many Walkers,' not 'Waters.' In addition to 'Wide Horizons: Being Wanderings in Central Australia,' and the book of reminiscences, 'I Recall,' he is the author of a book of essays, four biographies, and a short history of Australian art. So there!"

Mrs. V. H. Miller suggests the following amendments:—Page 7, line 1: For "propagater" read "propagator." Page 8, line 28: For "T. G. Stone" read "T. G. Sloane." Page 16, line 10: For "Gilson Carmichael" read "Gibson Carmichael." Page 17, lines 6-7: Delete sentence "Beginning with a lecture" (Leach did not begin with the lecture on birds; his first lecture to the F.N.C. was on mosquitoes, given more than six years before the bird lecture). Page 22, line 43: For "Mr. V. Miller was elected an Hon. Life Member" read "Mrs. V. Miller was elected an Honorary Member." Page 25: For "N. Burdett" read "W. Burdett." Page 29, line 31: For "Editor for twelve years" read "Editor for more than fourteen years."

EXCURSION TO SHERBROOKE

A party of 32 attended this excursion on June 1, and though the Lyre-birds were unusually quiet, practically everyone who attended was able to see some. One is forced to the conclusion that Lyre-birds are decreasing in numbers in the Sherbrooke Forest, and if this is the case it would be interesting to know the cause.

A.G.H.

PLATE X



Part of a snare showing position of the strings of insect remains.



Strings of silk in which are entangled the remains of insect victims, together with the remains of male spiders.

Photos. by Edith Coleman.

FURTHER NOTES ON THE FLORA OF TORQUAY

By NOEL LOTHIAN, Melbourne

Just twelve months after the disastrous fires which swept along the foreshore of the Bay in January, 1939, a similar fire devastated the township of Torquay, together with the surrounding countryside. Not only did it cause great loss of property, but also burnt out many square miles of native bush and forest land.

Recently the opportunity presented itself to visit this region and see whether the rejuvenation, about which W. L. Williams writes in his "Rejuvenation of Coastal Flora at Dromana" (*Vic. Nat.*, June, 1940), had started. Rejuvenation has begun, but not in the way which any lover of our Australian plants would be pleased to note.

The most startling feature is the widespread distribution of the onion weed (*Romulea Bulbocodium*). It was not until this visit had been made that the seriousness of this pest was realized. Large areas up to 20 square yards contain the weed, to the exclusion of all other vegetation, except an odd *Carex* or grass, with a plant or two of Paterson's Curse (*Echium plantagineum*).

This is another plant which, coupled with the Cape Weed (*Cryptostemma calendulaceum*), should not escape notice; in fact, so widespread are they now that that is impossible. Both of these were in great abundance before the fire, and with their ability to grow in most uncongenial places, coupled with the plenitude of good seed annually produced, it is likely that their distribution will be even greater than that previously noted. Already a large patch of Cape Weed has taken the place of a good-sized lawn in front of what was one of Torquay's guest-houses.

Other aliens which should be noted are:—*Gnaphalium candidissimum*, *Rosa rubiginosa*, *Plantago Coronopus*, *Plantago lanceolata*, *Stellaria media*. The first two have made their appearance in the bush, some miles from the roads, a fact which will be regretted by naturalists. The other three are at present confined to the "waste" areas of the township, but it might be worth while watching to see if they will take the opportunity now presented, i.e., the burnt areas, to spread still further. Although a search was made, the common Blackberry (*Rubus fruticosus*) has so far made no serious inroads into this area, and we hope this position will remain.

In connection with the alien flora of the area, a provisional list has been drawn up, and, although far from complete, it is hoped will act as a stimulus to those who visit this district to add to it still further.

Agropyrum repens
Albizzia lophantha
Alopecurus agrestis

Hypochocris radicata
Lolium multiflorum
Lolium perenne

<i>Ammophila arundinacea</i>	<i>Malva moschata</i>
<i>Anagallis arvensis</i>	<i>Marrubium vulgare</i>
<i>Anthoxanthum odoratum</i>	<i>Mesembrianthemum crystallinum</i>
<i>Avena fatua</i>	<i>Onopordon Acanthium</i>
<i>Bellis perennis</i>	<i>Oxalis purpurata</i>
<i>Brisa minor</i>	<i>Phleum pratense</i>
<i>Bromus arvensis</i>	<i>Plantago Coronopus</i>
<i>Bromus mollis</i>	<i>Plantago lanceolata</i>
<i>Bromus sterilis</i>	<i>Poa annua</i>
<i>Bromus unioloides</i>	<i>Polygala myrtifolia</i>
<i>Capsella Bursa-pastoris</i>	<i>Romulea Bulbocodium</i>
<i>Carduus arvensis</i>	<i>Rosa rubiginosa</i>
<i>Carduus lanceolatus</i>	<i>Rumex acetosella</i>
<i>Chenopodium Bonus-Henricus</i>	<i>Rumex conglomeratus</i>
<i>Chrysanthemum Leucanthemum</i>	<i>Rumex obtusifolius</i>
<i>Convolvulus arvensis</i>	<i>Senecio vulgaris</i>
<i>Cryptostemma calendulaceum</i>	<i>Sonchus asper</i>
<i>Dactylis glomerata</i>	<i>Sonchus oleraceus</i>
<i>Echium plantaginicum</i>	<i>Stellaria media</i>
<i>Euphorbia Peplus</i>	<i>Taraxacum officinale</i>
<i>Festuca ovina</i>	<i>Trifolium procumbens</i>
<i>Foeniculum vulgare</i>	<i>Trifolium repens</i>
<i>Fumaria officinalis</i>	<i>Trifolium subterraneum</i>
<i>Gnaphalium candidissimum</i>	<i>Ulex europaeus</i>
<i>Holcus lanatus</i>	<i>Urtica urens</i>
	<i>Xanthium spinosum</i>

Regarding the rejuvenation of the native flora in the paper previously cited, apparently insufficient time has elapsed for this to take place to the advanced stage as at Dromana and other byside towns.

No seedlings due to the direct influence of the fire were seen, not even Acacias or Eucalypts, no doubt because of the comparative lack of rain, which, until recently, had not fallen in any great amount.

Where burnt, or severely scorched, the coastal Tea-tree (*Leptospermum laevigatum*) has not sent out new shoots, whilst the Monah (*Melaleuca pubescens*) has responded to what little rain has fallen by throwing up shoots from the main trunk, usually at a distance of less than two feet from the ground level.

The opportunity did not present itself to take sections of the stem above these roots to discover whether the tree was alive at a great height or not, but it would be more likely for shoots to occur from the dormant buds which are totally unharmed, rather than younger and more prominent buds which were probably partially damaged by the heat.

Both the Golden Wattle (*Acacia pycnantha*) and the Yellow Gum (*Eucalyptus leucorhylon*) are sending forth new shoots in abundance. The Thyme Rice-flower (*Pimelea serpyllifolia*), so far

as could be ascertained, has failed to throw out new growth, and in badly burnt or scorched trees of the Drooping She-oak (*Casuarina stricta*) a similar state was noted. In the latter case no seedlings could be seen.

Trees planted at various times in and about the township have suffered, with diverse results. The *Coniferae*, for example, have, without exception, been killed outright, while other plants, such as the Sugar Gum (*Eucalyptus cladocalyx*) are throwing up copious growths.

With the exception of the *Carex* and one or two others, herbaceous plants were not visible. Leaves of *Carex* and *Juncus* spp. are re-appearing, and flowering plants of *Lomandra filiformis* emerge as an oddity—as the cluster of leaves, which is usually present when in flower, was absent.

In certain patches where previously *Carex* spp. and a few odd grasses predominated it was noted that very large patches of the Scented Sundew (*Drosera Whittakeri*) are appearing where only odd plants had previously been seen.

Although receiving a complete firing, *Acaena Sanguisorba* shows signs of complete recovery—showing that with the Bracken (*Pteridium aquilinum*) firing, without subsequent treatment, will not kill this plant, extremely troublesome where sheep are grazed.

In a previous article on the Flora of Torquay (*Vic. Nat.*, Sept., 1936) it was mentioned (p. 84) that the forest must have extended to the left bank of Spring Creek. Opportunity was taken to examine a gully formed by slow erosion, by what is now a small creek, that empties itself into the sea about two miles to the north of the township.

This gully proved of extreme interest as the greater number of the spp. seen there had previously been collected and noted only in the forest area around the ochre mine—some $5\frac{1}{2}$ miles to the south-west of Torquay. It can be assumed, on this evidence, that the forest once extended to a distance of over 4 miles beyond Spring Creek, and may have reached beyond this.

All the *Eucalyptus* spp., together with the *Xanthorrhoea australis*, were to be seen in good numbers, the latter being extremely numerous.

Other typical "forest" plants seen were *Acacia verticillata*, *Clematis aristata*, *Goodenia ovata*, *Phyllanthus Gunnii*, and *Spyridium parvifolium*. It would appear that the reason of their survival is based on the gully being deep enough to shelter its inhabitants from the salt-laden winds, as once the tops of the gully are reached the vegetation assumes characteristic grassland features. It may be of interest to note that in this gully the only patches of the Common Maidenhair Fern (*Adiantum aethiopicum*) have so far been found around Torquay.

In this gully fine specimens of the coastal Honeysuckle (*Banksia marginata*) were seen. Some measured over 30 feet in height.

while plants of the same species, growing on the exposed cliffs a few miles away, rarely attain that number of inches.

The forest area around the ochre mine was revisited and a number of plants were collected, while many others were in bud.

Numerous patches of the Mosquito Orchid (*Acianthus exsertus*) were observed, some of which contained over $2\frac{1}{2}$ dozen plants, with well-developed spikes. *Pterostylis parviflora* was also seen but appeared past its best and not nearly so numerous.

During the few days spent at Torquay, 18 new spp. of plants were added to the list given in the article previously cited, comprising 8 new genera, thus totalling 59 genera and approximately 170 spp. for the area.

Additional plants:—*Adiantum aethiopicum*, *Thysanotus Pateronii*, *Stellaria pungens*, *Cakile edentula*, *Rubus parvifolius*, *Hypericum gramineum*, *Phyllanthus Gunnii*, *Halorrhagis tetragyna*, *Acrotriche serrulata*, *Plantago varia*, *Wahlenbergia multicaulis*, *Olearia lepidophylla*, *Olearia pannosa*, *Gnaphalium luteoalbum*, *Helichrysum rosmarinifolium*.

THE BEAUTY OF AUSTRALIA

"It was at Carcoar [N.S.W.] that I first realized the beauty of Australia. In Sydney it had been the night sky, the clear moonshine, the far horizons that had fascinated me. At Carcoar it was especially the wealth of brilliant bird life and the forms of the trees, but above all the typical wattles of Australia, which there seemed to grow with peculiar loveliness and luxuriance, so that they float still in my mental vision. . . .

"My walk over the hills several times a week [at Sparkes Creek, near Scone] brought fresh, delicious insights into Nature, such as now came to me for almost the first time in my life. The fauna of this region was new and strange, more abundant than I had elsewhere seen. There were few snakes and not many birds. But there were many creatures of other kinds: huge jew lizards that lay motionless along branches of trees, and native bears, that moved away slowly, very slowly, if I approached them, and, above all, there were great kangaroos, that I was never able to approach, though I gazed at them with fascinated eyes as they would descend the hill slopes in large, slow, gracious bounds. It is one of the most beautiful modes of progression in Nature. No one has seen a kangaroo who has only seen a captive kangaroo."

—From *My Life*, by Havelock Ellis, the English author who died in 1939. He was a school-teacher in N.S.W. during 1875-78.

DEATH OF MR. H. J. CARTER.

Naturalists everywhere will regret the death of Mr. H. J. Carter, which occurred suddenly at his residence, Wahroonga (N.S.W.), on April 16. He was 82 years of age, having been born at Marlborough (England) in 1858. Migrating to Australia as a young man, he became a mathematical master at Sydney Grammar School (1881-91) and was afterwards principal of Ascham. He was a sound educationist and general naturalist, and in those capacities was one of the editors of *The Australian Encyclopedia*.

Mr. Carter's chief work, however, was in entomology. He was a specialist in Coleoptera and on this subject he published a large number of papers. His collection of beetles, which contains many types, is in the National Museum, Melbourne.

A genial, kindly personality is expressed in *Gulliver in the Bush*, a book describing Mr. Carter's insect-hunting adventures.

SOME ORCHID NOTES

By W. H. NICHOLLS, Melbourne

(1) *Caladenia Patersonii*, R.Br.

The type of this remarkably polymorphic species was collected in Tasmania. It is found also on the mainland and is plentiful in many districts during the springtime months. *Cal. Patersonii* has usually 1-3 flowers, usually white, pink or yellowish, with reddish longitudinal stripes on the perianth-segments, which are produced into long caudæ. The typical form is figured in Hooker's *Fl. Tas.*, ii, tab. 123.

Unfortunately, Robert Brown's description is all too brief for present-day requirements. Natural hybridism is responsible for many variations as regards size, colour and markings, also morphological features; thus the members of this group of forms which are at present included under the one name (*Patersonii*) are linked by intermediates, so much so that it is impossible even to sort the forms into varieties. Thus (to use the words of Dr. Rogers) "this group has become the dumping-ground for almost every *Caladenia* with caudate sepals, clavate or otherwise."

The present writer, however, makes no apology for the inclusion among the named varieties of a very beautiful form which is found plentifully in the Portland district of Victoria. It is a very distinct and comparatively robust form. The colour scheme is striking and unusual—pale olive-green with very deep markings of intense chocolate-brown, restricted in the main to the long gland-beset caudæ, which by the way are more or less rigid; that is, they are widespread. But the chief interest in this variety is the powerful and very pleasant fragrance of the flowers, hence *suaveolens* is offered as an appropriate varietal name.

C. Patersonii, R.Br., var. *suaveolens* (n. var.). *Flores crassiusculo-virides, graviter odorati*. A comparatively robust hairy plant about 15-30 cm. high. Leaf about 10-12 cm. long. Flowers 1-3, very fragrant. Sepals 5-8 cm. long. Petals 4-7 cm. long. Labellum shape as in the typical form.

Habitat: Portland (Mrs. F. Mellblom and Miss D. Lesley).

Flowering: Sept.-Nov.

(2) *Caladenia filamentosa*, R.Br.

(New locality) Anglesea Forest; growing in association with *C. dilatata*, R.Br. (Ken. Nicholls, Sept., 1939.) Flowers intermediate in colour, between the crimson (typical) form and var. *tentaculata*, Tate.

(3) *Thelymitra Matthewsii*, Hk.f. (*Th. D'Altonii*, Rogers).

New district. Anglesea Forest—same area as the foregoing (No. 2). (W.H.N., Sept., 1939.)

(4) *Prasophyllum patens*, R.Br., var. *robusta* (n. var.).

Planta robusta, circa 40 cm. alta. Flores comparate majores. Ovarium inusitate prominens.

Plant robust, about 40 cm. high. Flowers 2 cm. in diameter, in a loose spike of 14 cm.; segments wide spread. Ovary about 1-2 cm. long. (Very large to the size of flower.) Petals narrow-linear. (Other features as in typical form.)

Habitat: Smithton, Tasmania.

Arch'n Atkinson, Oct.-Nov.

(5) *Acianthus caudatus*, R.Br.

This unpleasantly odorous plant was found in surprising quantity along the Anglesea River, Anglesea (Vic.) during Sept., 1939. Individual specimens (and they were plentiful) reached 15 cm. in height, and had as many as from 4 to 9 flowers, somewhat a record for this usually 1-3-flowered species. This seaside colony is the largest the writer has so far seen—a compact mass well over 5 feet in diameter.

UNUSUAL FORM IN A COMMON FERN

As the Screw Fern (*Lindsaya linearis*) may be found during every month of the year in many districts of Victoria, I may call it one of the commonest. I would like to give a note on this species to collectors of native ferns to be added to page 42 in the Club's *Fern Book* of 1934.

"Sometimes the barren frond is bifurcate." At Yarra Junction, near Warburton, in May, I found this fern very abundant, varying from 3 to 8 inches in height. A strange form attracted my attention. The height was 3 inches, divided an inch from base, leaving the paired rhachis well covered with pinnae from the fork, while below the fork the stem was bare. As none of my authorities in all our States, or New Zealand, had noted this form, I asked Mr. Rae, of the Melbourne Herbarium, for his experience, and he replied that they had only one similar frond. So it is evidently rare. Many authorities describe the rhachis or stem as black. I am disposed to think that nigger brown is a better name. Sometimes it is tan or light brown, but I have never seen the stem of a black colour.

A. J. TADGELL.

THE CHILD AND THE SNAKE.

A story in a recent issue of the *Victorian Naturalist* (December, 1939), of a child's adventures with a snake, reminds me of the curious case of a young girl (age 2½ years) of a couple who lived in the bush. The child usually took her tea on a verandah, and one summer day she said, "Come and see my little birdie eating my bread and milk." The parents went, and were horrified to see a snake put its head up through a hole in the verandah. When the reptile was shot, the little girl was greatly distressed. Nothing would comfort her. "You killed my birdie!" she cried again and again. As she continued to pine for some weeks the parents took her to a doctor, who, after finding her organically sound, asked if she had sustained a shock of any kind. The parents then told him the story of the snake. He advised clearing the child's mind by getting her interested in something, and this was eventually done.

JOYCE BOCKING (Lawson, N.S.W.).

A CONTRIBUTION TO THE FLORA OF THE WHIPSTICK SCRUB, BENDIGO

By A. J. TADGELL, Melbourne

Mr. D. J. Paton wrote in the *Victorian Naturalist* of February, 1924, a most interesting article on the flora of this scrub, in which he enumerated 227 native plants. Mr. W. J. Audas visited the northern portion in 1936 and added 50 additional native plants. During various months of the past year and a half, I have paid a number of visits to the southern portion of the Whipstick and submit a further list of 45 native species with 60 alien species.

It must be remembered that this interesting area covers 70 square miles, so there are other interesting plants to record. Let us hope that in the near future at least a square mile or two of the scrub will be created a National Park; for the flora is not by any means its only right to fame, as fauna-lovers know well. Much of the countryside was turned over in the days when gold was sought untiringly, and conditions remain broadly the same as when the miners gave up their quest. Large dams and great piles of broken stone and earth with deep workings are frequently met with, so proof is not wanting that water conservation would not be difficult. Also, there is evidence that at times much water must run to waste, and no doubt many of the well-worn water-courses could without expense be dammed or banked.

To the botanist such plants as *Crowea*, *Cheiranthra*, *Eriostemon*, and 18-inch high *Wahlenbergias* would prove a strong attraction, to say nothing of the several species of *Eucalyptus*, *Acacias*, *Melaleuca*, and other peculiar vegetation and rare plant life.

Co-operation might be sought by our Club from residents of Bendigo and Eaglehawk in the creation of a sanctuary. So little of this vast area has been alienated from its present condition as a Forest Reserve that there seems little reason to think it will be required for economic purposes of any other kind.

Here follows a list of additions to the Whipstick flora:—

NATIVE SPECIES

Agropyron scabrum
Alteranthera denticulata
A. nodiflora
Acacia calamifolia
Amphibromus neesii
Boronia dentigera
Brachyloma ciliatum
Casuarina muelleriana
Cotula australis
Crassula bonariensis
C. colorata
C. pedicellosa
Chenopodium album
C. carinatum

INTRODUCED SPECIES

Aster squamatus
Aira caespitosa
Alchemilla arvensis
Amaranthus viridis
Anagallis arvensis et var caerulea
Avena sativa
Bartschia latifolia
Briza maxima
B. minor
Bromus hordaceus
B. rubens
B. sterilis
Carthamus lanatus
Centaurea melitensis

NATIVE SPECIES

Cyperus tenellus
Cymbonotus laesonianus
Dillwynia cinerascens
Erechtites prenanthoides
Goodenia primulacea
Helipterum pygmaeum
Hydrocotyle medicaginoides
Juncus acutus
J. plebius
J. holoschoenus
Kyllingia intermedia
Levinhookia sonderi
Limosella aquatica
Microtis oblonga
Nitella gelatinoides
Paspalum distichum
Pimelea stricta
P. humilis
Polygonum strigosum
Pultenaea laxiflora var. *pilosa*
Poa caespitosa vars. *australis*,
implexa, *subtilis* and *tenera*
Rumex brotenii
Spergularia marginata
Scirpus antarcticus
S. setaceus
S. cernuus
S. inundatus
Veronica plebeia
Wahlenbergia multicaulis
W. vincaeflora
Cladophora sp.

INTRODUCED SPECIES

Cirsium lanceolatum
Cryptostemma calendulaceum
Cyperus vegetus
Demazeria acutiflora
Erodium botrys
E. moschatum
Ehrharta longiflora
Erythraea centaurium
Euphorbia pepus
Festuca bromoides
F. myurus
Hypochoeris radicata
Hordeum nodosum
Holcus lanatus
Gnaphalium candidissimum
Inula graveolens
Juncus capitatus
Lepidium virginicum
Lolium multiflorum
L. temulentum
L. rigidum
Koeleria phleoides
Medicago hispida var. *denticulata*
Moenchia erecta
Microcala filiformis
M. quadrangularis
Oxalis cernua
Plantago coronopus
Poa annua
P. bulbosa
Polygonum aviculare
Polypogon lutosus
Romulea bulbicodium
Rumex acetosella
R. crispus
Sonchus asper
S. oleraceus
Spergula arvensis
Stellaria media
Triticum sativum
Trifolium glomeratum
T. dubium
T. procumbens
T. tomentosum
Urtica dioica

I must thank Mr. Rae, of the National Herbarium, for some of these references. Also, Mr. F. P. Morris has listed for me some Whipstick grasses not included—*Stipa mollis*, *S. elegantissima*, *Danthonia carphoides*, *D. duttoniana*, *D. setacea*, *D. richardsonii*—some of which I collected.

ORCHIDS OF THE GRAMPIANS DISTRICT: SOME ADDITIONAL RECORDS

By W. L. WILLIAMS, Melbourne

To the very comprehensive list of Grampians orchids compiled by Mr. Gilbert F. Rogers, and published in the *Victorian Naturalist* for April, 1940, three and possibly four, species should be added. They are *Chiloglottis reflexa*, *Caladenia cardiochila*, *Caladenia latifolia*, and probably *Thelymitra carnea*.

A few notes on each of these species may not be out of place:

Chiloglottis reflexa was found in Hall's Gap, among tangled scrub alongside Stony Creek, in April, 1932, and again in the autumn of the next year. Large colonies of the plants, but only a few blooms, were found on each occasion. The best of the blooms was found close beside a well-frequented track leading from the back of the camping-ground, the rest only at the expense of much crawling through tea-tree and bush-pea plants.

Caladenia cardiochila was found, first by the Misses Banfield and later by myself, among bracken fern near Mount William, a few miles north-east of the picnic ground, in October, 1934. Having been directed to the approximate place where the specimen first shown me was found, I spent some hours of a very warm day carefully quartering several acres of bracken and sand. Several blooms were found. This orchid is probably rare in the Grampians district.

Caladenia latifolia was found at Springwood Gully in October, 1931, and in the spring of each year from then until 1934. Further reports of this species in the Grampians district would be very welcome. A visit to Springwood Gully in October, 1939, revealed no trace of the orchid, though it used to be fairly plentiful in the bracken alongside the road. Some alterations to the track seem to have been made in the intervening years, and erosion, following the fires of January, 1939, has covered a large part of the old happy hunting-ground deep in silt.

Thelymitra carnea is a record of which one can be reasonably sure. There was, only a few years ago, a deal of confusion between this species and *T. rubra*. It is almost certain, however, that specimens of *T. carnea* were collected on the Long Gully track in October, 1939. More detailed study of this point is promised should the occasion present itself next spring. It may be added that in the spring of 1932 a pink sun orchid (either *T. rubra* or *T. carnea*) was especially common around Moyston.

Another record, not so far mentioned because a good deal of doubt has since been cast upon it, is *Prasophyllum gracile*, confidently identified by a noted orchidologist of another State in November, 1931, from specimens collected near the turn-off from the Pomonal-Hall's Gap road to the Terraces. This orchid appeared again in great profusion in the late spring of 1939, presumably

under the stimulus of the bush fires of that year. Mr. W. H. Nicholls is among those who are now not satisfied with the record. It is hoped to do more work on this orchid in the near future.

Other orchids found near Ararat (and which will in all probability be found still closer to the Grampians range) are:—*Prasophyllum brachystachyum*, found in the autumn of 1933 at the Rifle Range, Ararat; *Pterostylis robusta*, found each spring between 1929 and 1934, at the Asylum Paddock, Ararat; and *Pterostylis decurva*, found in February, 1935, at Mount Cole. Several specimens of the last-named species were found, but only one was in good condition, the rest having reached the early fruiting stage.

CULTIVATION OF STURT'S DESERT PEA

One of Australia's most beautiful leguminous plants, *Clianthus Damperii*, or, as it should now be called, *C. speciosus*, is not as common in cultivation as its beauty warrants.

Although seed is not uncommon, and the resulting germination is good, it is in the seedling stage that the greatest number of failures are recorded. Slugs and snails are both to blame, but quite a number fall through the ravages of "damping off" fungus, so that after many unsuccessful attempts to raise seedlings, the would-be possessor of this plant gives up in disgust.

Some time ago, there came to my notice a method whereby the seedlings can be brought safely through the critical seedling stage. Although to many people in England and on the Continent this is an everyday practice, it is perhaps not well known in Australia. It consists of grafting the young seedlings of *Clianthus* on to *Colutea arborescens* while in the seedling stage also, in the following manner:

Having been soaked in hot water for 24 hours, the *Clianthus* seeds are then sown in a 5-inch pot, containing a very light compost, usually in the early spring. As soon as these have germinated, the *Colutea* seeds are treated in a similar fashion, except that they are sown singly in "thumbs." By the time these have produced their cotyledons, the first foliage leaf will have appeared on the *Clianthus*.

The most satisfactory form of grafting for this operation is the "wedge." Severing the *Clianthus* well below the cotyledon, and tapering the sides, and slitting the *Colutea* between the cotyledons, and then slipping the scion into position, is all that is required, except for tying, which is best done with a strand of thin raphia or soft string, tied in a single hitch. The grafted plants are then placed under a bell-jar until they have become united and are commenced growth.

Although a little heat is advantageous for carrying out the entire operation, particularly the last stage, it is by no means essential, and so long as the grafts are kept in a close atmosphere, they should unite without difficulty.

The resulting shoots will grow very rapidly, and after they are nine inches or more they can be planted out in their permanent positions, or else given another size of pots before this is done. In the latter case, 3½ or 5-inch pots should be used.

For cool glass-house decoration, this plant is hard to excel. Usually three plants are placed in the centre of an 18-inch basket. The compost is of a very open, though not too sandy, texture. Plants so grown usually flower in the first year, and give an annual display for two or three years, after which time they can be discarded in favour of fresh plants coming on.

N. LOTHIAN.

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EXCURSION

SATURDAY, AUGUST 17.—Mr. W. R. Maughan's Violet Farm at Greythorn Road, North Balwyn. Leaders: Messrs. W. R. Maughan and A. S. Chalk. Mr. and Mrs. Maughan have a wonderful collection of Australian birds—including the Princess Alexandra Parrot and many beautiful inland Finches; also a lot of native animals. In addition, they have an extensive and valuable collection of Pheasants and Peacocks—some very rare. Excursionists may pick as many violets as they wish. There is an admission charge of 6d., which is devoted to charities. Take *North Balwyn* Tram at 2.15 p.m., in Flinders Street, and go right to terminus in Doncaster Road and walk to farm as directed by guide posts. *Alternatively*, the Warrandyte Service Bus leaves Flinders Street, opposite Ball & Welch Ltd., at 2.30 p.m., and will, upon request, drop passengers very close to the farm. Fare: 1/6 return.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

VICTORIAN SEA SHELLS, by C. J. Gabriel, describing 150 shells, all to be found in Port Phillip, is abundantly illustrated. Price, 1/6.

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SEPTEMBER, 1940

THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, SEPTEMBER 9, 1940

1. Minutes.
2. Subject for the Evening: Illustrated Address, "Wild Flowers of the European Alps," by Mr. E. E. Pescott.
3. Correspondence and Reports.
4. Election of Members.

AS ORDINARY MEMBER.	PROPOSER.	SECONDER.
Mr. A. L. Scott, 13 Gisborne Street, Elsternwick.	Mr. S. R. Mitchell.	Mr. H. C. E. Stewart.
5. Nominations for Membership.
6. General Business.
7. Remarks by Exhibitors.
8. Conversazione.

The Victorian Naturalist

Vol. LVII.—No. 5 September 4, 1940

No. 681

PROCEEDINGS

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday, August 12, 1940. The President, Mr. L. W. Cooper, presided, and about 100 members and friends attended.

VISITOR WELCOMED

The President introduced and welcomed Mr. Gregory Mathews and was supported in his remarks by Mr. A. H. Chisholm. Both speakers referred to Mr. Mathews's great work on Australian Ornithology and the research entailed in the compilation of the twelve volumes. Mr. Chisholm also referred to Mr. Mathews's generous gift of his Ornithological Library to the Commonwealth and to the gratification of ornithologists that such a library has been established at Canberra.

Mr. Mathews, in his reply, expressed pleasure at being able to renew old acquaintances after 27 years. He described how his library was collected and mentioned that the Canberra authorities will allow interested workers to obtain books on loan for research purposes through the public libraries of the various States.

SUBJECT FOR THE EVENING

The following were contributions to the "Bird Evening":—

Mr. A. H. Chisholm exhibited and explained slides of birds nesting at the present time.

Mr. R. T. Littlejohns exhibited some of his famous Lyre-bird studies taken at Sherbrooke Forest, including some in Dufrey colour.

The Commonwealth Cinema Branch showed three "Talkie" films of the Lyre-bird, the story of *Cactoblastis*, and "The Teddy Bears' Picnic," with musical accompaniment.

These were greatly appreciated by the audience, and Mr. Cooper conveyed the Club's warm thanks to Mr. Littlejohns, Mr. Chisholm, and the Commonwealth Cinema Branch.

REPORTS OF EXCURSIONS

Excursions were reported as follows:—Melbourne University, Zoology School, Mr. L. W. Cooper (for Prof. Agar). Melbourne Streets on Building Stones, Mr. A. C. Frostick.

OCT 14 1940

ELECTION OF MEMBER

Mr. B. M. Sloggeth was elected as an Associate Member.

GENERAL BUSINESS

Wild Nature Show:—It was reported to the meeting that the Committee recommended the show be held at the Club Rooms on the ordinary meeting date in October, during the afternoon and evening.

Mr. H. P. Dickens was congratulated on having been elected President of the Ship-lovers' Society.

QUESTIONS BY MEMBERS

Question:—Has it been established that the Black Swan (*Chenopsis atrata*) is a long-lived bird, and is there any evidence that it lives for many years after ceasing to breed?

Answer by Mr. Gregory Mathews:—There is no data regarding the life-period of the Black Swan.

Question:—Where does the Pallid Cuckoo migrate to?

Answer by Mr. Mathews:—Both the Pallid and Bronze Cuckoos probably migrate to New Guinea and adjacent islands.

EXHIBITS

Mr. R. W. Armitage:—1. Pupæ of the Cabbage White Butterfly (*Pieris rapæ*). 2. Imago of same, taken from a raddish plant at Caulfield, August 4, 1940.

Mr. C. French:—Orchid, *Prasophyllum despectans*, yellow variety from the Grampians; collected by Mr. Gilbert Rogers.

Mr. H. P. Dickins:—Specimens of the latest method of reproduction of flowers.

Mr. W. Hunter:—Unusual specimens of Eastern Victorian flora. (Pressed specimens.)

Mr. W. H. Nicholls:—Nine drawings of *Thelymitra carnea* from the type specimen at Kew, England.

Mr. A. A. Baker:—Silicified wood from the following N.S.W. localities:—Talbrager, Albion Park, Burning Palm's Beach, Eden, Lake Macquarie, and Mlt. Nebo.

Mr. S. R. Mitchell:—Mineral specimens obtained on a recent visit to Torrington, New England District, N.S.W., consisting of quartz crystals showing numerous modifications and associations with other minerals as molybdenite, tourmaline and flourite. Most of the specimens were collected from the New England and Curnow's Mine.

PLATE XI



Male Lyre-bird in full display, showing the beautiful lacy filaments as the "fairy parasol" is brought over the head, and also the under-side of the large tail feathers. The bird is facing the camera. (Sherbrooke Forest, Victoria.)

Photo. by R. T. Littlejohns.

NEW PICTURES OF THE LYRE-BIRD.

By R. T. LITTLEJOHNS, Melbourne

The study of the Lyre-bird has become so popular recently that the written history of the species must almost be complete by now. Nevertheless, there do occur still, in the experience of each observer, incidents which are new to him. One continues the study, in fact, in the hope of experiencing such occurrences.

To the photographer the story of the Lyre-bird is never likely to be complete, because the desire to photograph new incidents is added to the hope of witnessing them. Furthermore, the difficulties connected with obtaining satisfactory pictures of the display of the male are so serious that the perfect photograph probably never will be taken. Apart from the obstacles raised by the poor quality of the light usually available, there is the fact that it is almost impossible, except by motion pictures, to record the display ceremony in such a way that the bird itself and the beautiful tail-ornament are shown convincingly at one time.

After spending much energy during the last few years in an endeavour to obtain the elusive picture which would be clear to everyone, I must content myself, for the present, with the thought that, in the accompanying illustration, the rare beauty of the displayed tail is recorded somewhat efficiently. The incident, of course, is commonplace enough, the bird being shown in the typical display attitude. The differences between this and many other pictures I have taken lie in the more correct rendering, here, of the fine filmy plumes and in the fact that the shadowy outline of the performer may be seen through the lacy canopy.

The reason for the greater efficiency is that a fortunate combination of lighting conditions made it possible to use an exposure of only $\frac{1}{150}$ part of a second. Previous pictures had required exposures of $\frac{1}{25}$, $\frac{1}{50}$, or $\frac{1}{75}$ of a second, and the filmy plumes became thickened unnaturally by movement. Even in this latest photograph some movement is shown at the swaying ends of the plumes.

Two incidents of more than passing interest have been recorded by photography during recent seasons. One deals with the removal of fern stems in the formation of a mound and the other records, rather inefficiently, the visit of the female to the mound where the male was displaying.

I am convinced, now, that at the mating time the female does interest herself in the display of her mate to a far greater extent than I had realized previously. I think I am right in saying that observers have not seen the female often at the mound, but I feel sure that, when there is no observer near to disturb the partici-

pants, much of the courting is carried on at the mounds during the display.

During May, 1939, the female visited mounds where the male was displaying four times within half an hour. On the first occasion (when, apparently, my presence was not realized by the female), she walked boldly on to the mound and the two birds stood beak to beak with necks outstretched and heads lowered for the space of a few seconds. Then the female noticed me and departed with a wild shriek. I feel certain that my presence interrupted some very interesting courtship ceremony.

Indeed, the portion which I did observe fitted exactly into a scene described to me by the late Miss Fawcett, of Sherbrooke Lodge. (That little lady spoke often of an occasion when she saw a male bird dancing on a mound in the forest. As she watched, the female came from the ferns and walked up to him as he sang. As his mate approached he ceased his singing, bowed low, and extended his neck towards her. She adopted a similar attitude and their beaks met. For several seconds the birds remained thus, oblivious of the watcher's presence and absorbed in the prettiest caress it was possible to imagine.)

On three occasions during the next half-hour the female came to the mound again, but, knowing of my presence apparently, did not continue the original actions. She moved so furtively, in fact, that only once was I able to make an exposure. Even then the picture shows little except that the female was at the mound.

In an experience of thirteen or fourteen years I have not seen the female actually at the mound on more than two or three other occasions, although I often have seen her in the vicinity. But I have seen the male bird many times acting in a manner which I now believe to be reserved¹ for those occasions when normally the female would take part. Prior to my realizing that the female was near during the 1939 incidents, the male bird, on each occasion, crouched with bent knees and adopted a curious backward movement. I have seen this same attitude adopted on some occasions since and each time the female has been found to be near by, apparently anxious to visit the mound but prevented by fear from doing so. The crouching attitude of the male is shown in the accompanying photograph, whilst the agitation of the female is indicated by the raised crest.

The incident which deals with the removal of fern stems from the vicinity of the mound is interesting, as an indication of the intelligence of the Lyre-bird. Some of the ferns to be removed are often six feet in height and present difficulty even to a human. The method adopted by the Lyre-birds appears to be uniform and thorough. The first necessity is to bend the fern from the perpendicular in order that it may be flattened subsequently by

PLATE XII



Male Lyre-bird displaying and crouching on his mound (Sherbrooke Forest) while a female Lyre-bird looks on with crest slightly raised.



Male Lyre-bird grasping a stem of bracken, as high as he can reach, in order to press it down prior to tearing it from the ground. The bird is on a display-mound in Sherbrooke Forest.

Photos. by R. T. Littlejohns.

a repeated jumping process. To incline the stem so that it may present a foothold for the jumping action, the Lyre-bird grasps it at a point as high as possible above the ground, braces himself on the other leg and tugs with all his strength. The final stage of the proceedings is the dragging of the prostrate stem backwards and forwards in a semi-circle until the roots give way. The whole operation may take half an hour, or the efforts may be continued intermittently over several days. In the accompanying photograph the bird is shown grasping a bracken stem in the first phase of its removal.

A QUEST FOR BOTANISTS

By A. J. SWABY, Melbourne

Away in the west, beyond the Grampians, a little white lily awaits an introduction to science. There may be more than one.

About fifteen years ago, when Mueller's "Key" was my only guide, I found a very slender plant with one flower—of the Liliaceæ without doubt—that would not "fit." It grew amongst *Xanthorrhæa minor* on a small flat in the district of Miga Lake. This is not far from the junction of the roads from Horsham through Natimuk to Edenhope and Harrow, via Jacky Jacky.

Near the end of December, 1936, with Mr. Harold Smith, I found several of the same or an allied species. This time, it was on the west side of the Black Range, and again associated with *Xanthorrhæa minor*. The excursion was so rich in species unknown to us, however, that the little lilies suffered before they could be examined in detail. Then, by some error for which I cannot account, the wrong specimens were sent on to the National Herbarium.

This much is certain:—The general habit of the plant is similar to that of *Tricoryne elatior*. This was plentiful in the Black Range locality and was present for comparison. The woolly tufts on the filaments, just below the anthers of *T. elatior*, were in all cases absent from the stranger. It resembles very closely the description of *Corynotheca*, as given by J. M. Black in "Flora of South Australia"; but does not exactly correspond with the species found there. *Corynotheca* is apparently a small genus and seems to have been recorded only from the far north of South Australia and (another species) from New South Wales.

The purpose of this note is to seek the aid of members who may pass that way in summer and their friends living in the Edenhope, Harrow, Balmoral, and Arapiles areas.

When will it come to light, and through whom?

DEATH OF MRS. A. S. KENYON

Members of the Field Naturalists' Club and a wide circle generally will regret very much to learn of the death of Mrs. A. S. Kenyon, wife of a former President of the F.N.C., which occurred at Heidelberg on August 20. Our warm sympathy is extended to Mr. Kenyon and his daughter.

CORRIGENDUM

Delete *Acacia calamifolia* in 11th line from bottom in list of native species, "Whipstick Flora," p. 85, August, 1940.—A.J.T.

A NEW TYPE OF SUNDEW FROM NORTH QUEENSLAND

By C. T. WHITE (Government Botanist of Queensland),
Brisbane

More than half the world's Sundews (genus *Drosera*) occur in Australia and New Zealand. Among a large collection of plants made in North Queensland by Mr. L. J. Brass were several sheets of a Sundew of a type quite unfamiliar to me.

The most modern classification of the group is by L. Diels in Vol. 17b of Engler and Prantl's *Natürlichen Pflanzenfamilien*, though this is based largely on an earlier classification by the French botanist Planchon. Diels recognizes twelve sections into none of which our plant comfortably fits. I have therefore made a new section (*Prolifera*) to contain it. The new section may be described as follows:—

Section *Prolifera*: Leaves without stipules, rotund, borne on long petioles, arranged in a basal rosette. Flowering scapes weak, bearing a vegetative bud at the apex.

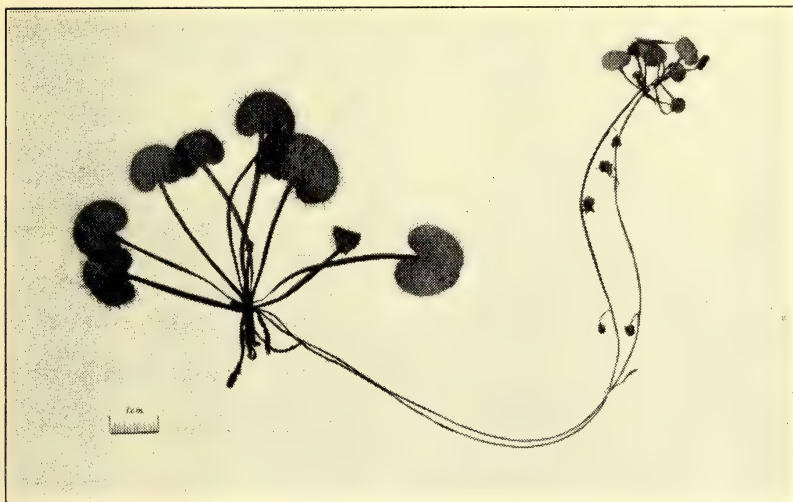
The section consists of one species, a native of the mountains of North-east Queensland. The affinities of this new section lie with Section *Arachnopus* Planchon, but differ markedly in the rotund long petiolate leaves.

I have determined to call the species *D. prolifera* and the description is:—

Drosera prolifera (new species): Herb, without any stem above the ground. Roots fibrous. Leaves on long petioles, arranged in basal rosette, submembranous, rotundate-reniform, 1.5 cm. diameter. On the upper surface, and along margins, clothed with glandular hairs; lower surface glabrous. Ligule absent. Petiole glabrous, 3-4.5 cm. long. Flower scapes 1-2, very weak, 10-18 cm. long, bearing 4-6 flowers, and commonly a vegetative bud at the apex. Pedicels 3-5 mm. long. Sepals lanceolate, 4 mm. long, 1 mm. broad. Petals shorter than the sepals, obovate, apex obtuse or almost truncate. Stamens 1.5 mm. long; filaments and connective applanate. Pistil glabrous, styles 3, bifid. Cook District: Thornton Peak (in sheltered places near the summit), alt. 4,000 ft. L. J. Brass, No. 2272 (flowers and immature fruits), 14/3/1932 (scapes trailing on the ground, rooting and forming a new plant at the end; leaves membranous, very pale green, the long hairs on the upper surface of the lamina each tipped with a bright red gland).

The present species in floral structure approaches *D. Adelae* F.

Muell., and *D. schizandra* Diels (Section *Arachnopus*) from North Queensland. Both of these, which are well figured by Diels in Engler and Prantl's *Natürliche Pflanzenfamilien* (Bd. 17b, p. 777, ed 2), differ in having sessile lanceolate leaves. I am indebted to Prof. J. S. Turner, Melbourne, for making available to me a copy of Planchon's description of his section *Arachnopus*.



Drosera prolifera, new Sundew from North Queensland

In conformity with the international rules of botanical nomenclature, the following Latin descriptions of the new section and species are given:—

Section Prolifera (sect. nov.) *Folia exstipulata, rotundata, longe petiolata, in rosulam basilem disposita. Scapi debiles, ad apicem proliferi.*

Species 1 montium Australiae tropicae incola.

Drosera prolifera sp. nov. *Herba acaulis, radice fibrosa. Folia longe petiolata in rosulam basilem disposita, lamina crassiuscule membranacea, rotundato-reniformia, 1.5 cm. diam., supra margineque glanduloso-ciliata, subtus glabra; ligula nulla; petiolo glabro, 3-4.5 cm. longo. Scapi 1-2, debiles, 4-6 flori, 10-18 cm. longi, ad apicem proliferi. Pedicelli 3-5 mm. longi. Sepala lanceolata 4 mm. longa, 1 mm. lata. Petala sepalis breviora, obovata, apice obtusa vel fere truncata. Stamina 1.5 mm. longa, filamentis connectivisque applanatis. Pistillum glabrum; stylis 3, bifidis.*

NOTES ON THE CABBAGE WHITE BUTTERFLY

The last appearance of the Cabbage Butterflies (*Pieris rapae*) before the winter in Caulfield was on June 3, and they reappeared on August 4. It will be seen that, during this winter, only during the months of June and July was the butterfly absent, a fact indicating that it is a very hardy insect. It was plentiful last summer in the Upper Yarra Valley towards McMahon's and McVeigh's. The larvæ feed greedily upon the leaves of all the members of the Mustard family—the Cruciferae.

This butterfly reached North America from Europe in 1860. From different points as diverse as New York, Charleston, Chicago and Quebec, it spread very rapidly throughout the whole of Canada and the temperate parts of the U.S.A., having left behind in Europe the only factor that could keep it in check, viz., a species of a small ichneumon wasp. When, later, this hymenopterous insect was introduced, the pest was checked, so that in 1899 it is recorded that a person who collected 150 Cabbage Butterfly larvæ could only manage to rear 16 pupæ, the remainder having been destroyed by the parasite.

As this butterfly produces at least three broods each season it may become a very serious pest in Australia, causing severe losses to market gardeners growing cabbages, cauliflowers, turnips and radishes, as well as lettuce, which it also attacks.

It would seem to be advisable to procure from Europe or North America parasites that will keep the pest within bounds, otherwise there is nothing to prevent its rapid dispersal throughout the temperate coastal districts of Australia. Already, on account of its fecundity, it is the commonest butterfly to be seen around the Melbourne suburbs.

R. W. ARMITAGE.

The above note draws attention to the extraordinary rapidity with which *Pieris rapae* has spread. As far as present records go, its first appearance in Australia was in March 1939. Until September of that year it was confined to the Williamstown-Werribee districts, except for perhaps isolated specimens at Canterbury and other suburbs. The species was first recorded on the eastern side of Port Phillip Bay during the first week in October. By April 1940, reports of it were received from as far east as Orbost and as far west as Nhill, and it was well over the border into N.S.W.

As regards the economic damage it can cause, a survey of over sixty market gardens within a 30-mile radius of Melbourne showed that to the market gardener who carries out his normal dusting programme, no damage results; the larvæ are easily

killed by efficient dusts containing arsenates or derris. As the growers are obliged to use these dusts to combat the cabbage moth, slugs, and other chewing insects which have been with us for years, no extra expense is entailed. On the other hand, the least neglect or the use of unsuitable dusts results in complete spoilage of the crop.

Parasites have been imported by the New Zealand Government and show satisfactory results in preliminary trials. Our Department of Agriculture is watching these trials; and if they are found satisfactory, will no doubt arrange to obtain parasites from New Zealand.

Mr. Armitage's note as to the short period of dormancy is interesting in view of the fact that the period of hibernation in England extends over five months. On the other hand, as the insect often pupates in sheds, houses, on fences and in other sheltered positions, it may have been expected that isolated specimens would be noticed earlier in the suburbs than in the open country farther away from the sea. Records showing the dates of the first appearance of the larvæ, which is the noxious stage, would be useful in working out the life-history of the insect in Victoria.

It is interesting to note that larvæ were found in gardens in Werribee that had not been dusted properly or only with nicotine dusts, as late as July, although in other market-garden districts, plots which had been likewise neglected and which had shown infestation up to early June were perfectly free from larvæ during June, July and August.

It is not known how many broods are likely to appear during the season under our climatic conditions, and any records on this point would be valuable.

I have noticed that our English thrushes have already revived ancestral memories and are preying upon the larvæ. Presumably other English insectivorous birds established here will do likewise.

G. M. HYAM.

ALL FOR THE LOVE OF A LIZARD

The following news item, which appeared as a Sydney message in a Melbourne newspaper on August 22, should have some appeal to naturalists:

Incensed when she learned that William Keith Cowan had apparently burned a stump in which her pet lizard had made its home, Mrs. Rosaleen Conroy, 22, of Woolgoola, beat Cowan on the head with a stick, according to evidence given at Grafton Court to-day, when she was fined £2 and ordered to pay £17/12/6 costs. Cowan was sent to hospital for 12 days, part of the time in a serious condition. Mrs. Conroy pleaded guilty to a charge of having assaulted Cowan. Police said the lizard had been seen since.

A WESTERN VARIETY OF *PULTENÆA MUELLERI*

By J. H. WILLIS, National Herbarium, Melbourne

In the gold-mining days of about 1860, the Rev. W. S. Whan collected near Skipton a Bush-pea which Bentham subsequently included in his description of *Pultenaea Muelleri* ("Flora Australiensis" II, 1864, p. 138). Bentham first states that the species is abundant on the Victorian Alps and then mentions the fact that the isolated Skipton specimens show fine, bristly points on both stipules and bracts.

Whan's plant has since been observed throughout the Wombat Forest—on gravelly hillsides from Daylesford and Korweinguboora to Blackwood (and possibly further east). Its aspect is strikingly dissimilar from all the samples of *Pultenaea Muelleri* that I have seen among the mountains of Gippsland; I was never quite satisfied in identifying it with them, and, if we accept the latter as typically representing Bentham's species, then the Skipton and Wombat Forest form is surely worthy of varietal rank.

H. B. Williamson, who did such valuable monographic work on *Pultenaeas*, did note certain peculiarities about the Skipton specimens, but he left the matter there.

Whereas the typical *P. Muelleri* is a tall shrub with spreading foliage, the form under discussion is a small wiry plant (seldom above 2 feet high) with narrow, *predominantly reflexed* leaves which give it a curious withered appearance. The bracts and bracteoles are much more sharply pointed than is general, and the stipules and calyx lobes are setulose; there appear to be no sensible differences between the corollas of both forms, nor between the pods and seeds.

Since the declined leaves of the Skipton-Wombat Forest plant offer the most arresting macroscopic feature, I have ventured to distinguish it under the varietal name of *reflexifolia*, and owing to its abundance in the Daylesford-Trentham region, the vernacular "Wombat Bush-pea" is proposed.

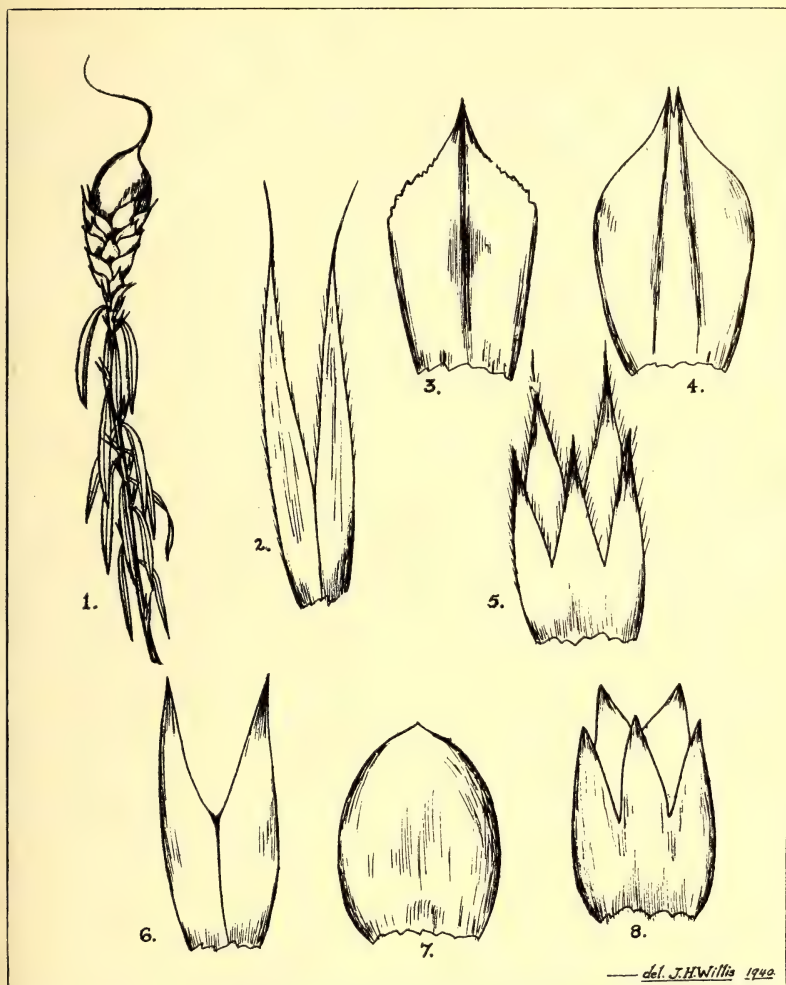
Here follows a short Latin description:—

Pultenaea Muelleri, Benth., var. *reflexifolia*, var. nov.

Dissimilis typicae P. Muelleri statura parva (30-60 cm.) foliis magnopere reflexis, stipulis setulosis, et lobis calicis setulosis.

Specimens consulted in Victorian National Herbarium:—

Near Daylesford: Musk (J. H. Willis) and Bullarook Forest (W. S. Whan); Skipton (TYPE W. S. Whan); Apollo Bay (F. V. Mueller)—sample from the last locality shows setulose calyx and bracts, but lacks the predominantly reflexed leaves.



1. Fruiting branch of *P. Muellerei*, var. *reflexifolia*, showing characteristic reflexed leaves.
2. Stipule of var. *reflexifolia*.
- 3, 4 and 5. Bracteole, bract, and calyx of var. *reflexifolia*.
- 6, 7 and 8. Stipules, bract, and calyx of typical *P. Muellerei* (for comparison).

NOTICE TO CONTRIBUTORS

Contributors who send material for publication in *The Victorian Naturalist* are requested not to use close typing, which renders difficult the insertion of any small amendments. Another source of some trouble is the too frequent under-lining of particular words, including technical terms. If this be left to the editorial discretion, italic type will be used where necessary. Moreover, contributors who send drawings would oblige by making these relative to the size of the page.

A RED-BACK SPIDER MAKES AN EGG-SAC

By FRANK HINCE, Brunswick, Victoria

Many notes concerning the habits, nesting-place, results of bites, etc., have been written about the female Red-back Spider (*Latrodectus hasseltii*), but as far as I know the egg-laying process has not been recorded. The following notes, taken on March 4, 1940, should prove of interest to most readers:—

6.25 p.m.: Glancing into one of my glass-fronted boxes, I notice a female Red-back Spider hanging in the position usually adopted by this species—the body in a horizontal position with the dorsal surface nearest and parallel to the ground; but she is acting in a strange manner. Looking closer I find she has begun her first egg-sac in captivity, the portion completed being a thin disc approximately $\frac{1}{8}$ of an inch in diameter. This disc is slightly convex on the upper surface, and concave beneath. Holding a network of threads with her feet, she hangs in an inverted position and alternately raises and lowers her plump abdomen—her spinnerets touching now here, now there, as they weave the inverted dome that is to be the resting place for the eggs.

6.37 p.m.: The thin silken sides formed by innumerable attachments are slowly making their way earthwards; the completed portion being about one-third of a sphere. Looking closely at her work, one cannot help noticing the great thickness of the foundation disc.

6.38 p.m.: The female now presses her abdomen upward and into the partial sphere. The spinnerets are motionless near the inner wall of the sac, the epigastric furrow being directly beneath the top of the dome. (On the ventral surface of the abdomen there is a transverse depression known as the epigastric furrow; the opening of the female reproductive organs lies in this depression or groove.) Looking very closely at the spider one can catch a glimpse of a semi-transparent droplet exuding from the abdomen on the middle line of the body. The abdomen is lowered a little, then pressed upwards into the sac again. At this stage the egg-mass has the appearance of a shining pink bubble. As the spider gradually raises and lowers her abdomen the mass becomes larger, till she ceases these slow movements.

6.43 p.m.: The eggs are all deposited. The egg-laying period occupied five minutes. As the eggs are deposited the spider's abdomen, hitherto swollen, becomes smaller and wrinkled.

6.45 p.m.: The sole aim of our spider now seems to be to see how quickly she can cover her eggs from prying eyes. As her spinnerets make contact with the sides of the sac, her abdomen rises and falls, moving at the remarkable speed of one hundred and sixty attachments a minute. The sac is now being com-

pleted at a far greater speed than that employed in the initial stages of development. The eggs can be seen through the thin walls of the sac. They adhere to the top, and a space of $\frac{3}{32}$ of an inch surrounds the remainder of the mass. As the work is carried on the eggs become invisible, until a golden sphere of silk remains.

7.25 p.m.: The spider now begins to pause occasionally in her work.

7.32 p.m.: The sac and contents are now completed, and with her eight legs clasping her treasure the potential mother enjoys a well-earned rest. From the start to the finish of her sac she took one and a quarter hours.

EGG-LAYING OF THE ORB-WEB SPIDER

By JAMES PRESTON, Coburg, Vic.

Known generally as the Orb-web or Wheel-web Spider, *Araneus* (= *Epeira*) *productus* is a fairly common species in gardens of Melbourne. The manner in which it spins its remarkable web has been described by Mr. S. G. Butler in the *Victorian Naturalist* (April 1933) and here follow some notes on the egg-laying of the species, as observed on a night in April:—

At 12.30 a.m. the spider had spun a thin fluffy mat of yellow silk near the roof of the cage; this was guyed in all directions. The spider hung upside down under this mat, by the aid of her first three pairs of legs, and drew silk from her spinnerets with the fourth pair. For a few seconds the legs drew silk and pressed it to the existing mass; then the abdomen was drawn up and the spinnerets affixed the silk. As she worked, the palpi delicately explored the mass.

1.0 a.m.: By this time the silken mass had grown larger and thicker.

1.12 a.m.: The mass assumed some shape, for at this stage the spider was adding silk to the outer edges but not to the centre. This action gradually created a concave surface on the underside.

1.30 a.m.: Mass was much thicker but still no silk had been added to the centre.

2.0 a.m., From the beginning the spider used only soft yellow silk and at this stage the mass appeared to be very unwieldy. As she worked she appeared to draw the edges of the concavity inwards.

2.9 a.m.: Suddenly, without any warning, she ceased to spin and hesitated directly under the concave surface of the silk mass.

A tiny globule of white matter, slightly tinted with red, appeared in the centre of the ventral surface of her abdomen, and swelled until it was about 2 mm. in diameter. With a convulsive movement she pressed her body upward so that the globule was pressed into the concave surface. For a few seconds she held this strained position, then dropped back. At irregular intervals she strained her body upward and the globule swelled. In the creamy coloured mass the reddish-brown eggs were clearly visible. As the mass grew in size, so her abdomen shrunk.

2.17 a.m.: After a last convulsive effort, prolonged for some time, she lowered her body with a tired movement and commenced to cover the eggs. As she pressed the mass upwards, she drew the edges of the silk mass inwards and the spinnerets joined the edge.

2.25 a.m.: She was still drawing silk and placing it on the golden mass. When completed the mass was flat on top and rounded beneath.

SHARKS AND THEIR KINDRED

Mr. G. P. Whitley (author) and the Royal Zoological Society of New South Wales (publisher) are to be congratulated on the production of the first volume of a new work on the Fishes of Australia, which aims at giving a short description and an illustration of about 2,000 distinct species. The present volume—modestly described as a “Handbook”—deals with the sharks and their allies (the rays and others) and adds a sprinkling of oddities such as the primitive lancelets and lampreys, as well as that extraordinary relic of ancient days, the unique Queensland lung-fish.

As ichthyologist of the Australian Museum (Sydney) Mr. Whitley is Australia's foremost scientific worker of to-day amongst fishes, and with his usual thoroughness he has made a very comprehensive and informative book—one that is apt to interest laymen as well as zoologists. For example, the systematic list and descriptions of sharks are preceded by chapters dealing with the anatomy and habits of these creatures and by a detailed discussion of sharks in relation to man in Australian waters. There have been, according to Mr. Whitley's records, 130 attacks on human beings and 10 attacks on boats by sharks on our coasts from 1803 up to the end of 1939. Many of these, of course, have had fatal results. The chief centres of the attacks have been the Sydney-Newcastle area—due mainly to the popularity of surfing in those waters—but Queensland, too, has had many cases—approximately 30 in all—at various times. Netting, shark-fishing, “spotting” from aeroplanes and other devices have been tried, but still the menace remains. Victoria, fortunately, has been practically free from shark attacks; only four cases affecting humanity are recorded.

All other sections of the book are equally informative. That dealing with the lung-fish is by way of being a romance of Australian history. It is true, as the author suggests, that “the early history of our Australian animals is most fascinating, and has often been overlooked or obscured by later developments of knowledge.”

(“The Fishes of Australia; Part I: The Sharks, Rays, Devil-Fish, and other Primitive Fishes of Australia and New Zealand,” by Gilbert P. Whitley; published by the Royal Zoological Society of N.S.W.; price, 7/6.)

A.H.C.

THREE ORCHIDS OF THE GENUS *THELYMITRA*

By W. H. NICHOLLS, Melbourne

In recent issues of *The Victorian Naturalist* (Vol. lvi., April, 1940, pp. 202-204, and Vol. lvii., August, 1940, p. 87), Gilbert F. Rogers and W. L. Williams publish lists of the Orchidaceæ as occurring in the Grampians. Herein is mentioned, among other species of the genus *Thelymitra*, Forster, R. D. Fitzgerald's *Th. rubra*¹ (syn. *Th. Mackibbinii*, F. Muell.) a widely-distributed southern form, which has long remained unrecognized.

In "A Census of the Plants of Victoria" (1923); Ewart's "Flora of Victoria" (1930), and similar publications concerned with the plants of Victoria, also those of South Australia, Western Australia, and Tasmania (all within its distribution) *Th. rubra* has been omitted, for it has been considered only as a synonym of Robert Brown's *Th. carnea*.² This inference, however, is incorrect, as the following facts will prove.

Robert Brown's type material of *Th. carnea* was collected in New South Wales (Habitat, Port Jackson).

The plant presumed in the other States (as mentioned above) to be Brown's species, is not yet on record for New South Wales. *Th. carnea* (a species distinct from *Th. rubra*, Fitz.) is correctly interpreted by New South Wales botanists.

The former plant, however, is also well-known in Victoria, but under another specific title, viz., *Th. Elizabethæ*, F. Mueller.³

Through the courtesy of Sir Arthur Hill, Director, Royal Botanic Gardens, Kew (England), I have received beautifully-executed line drawings of Robert Brown's type material of *Th. carnea*, showing all details. These drawings prove the correctness of the above statements, and show that Fitzgerald's interpretations of the two forms (*Th. carnea*, Br., and *Th. rubra*, Fitz.) are faithfully presented in his work (see "Australian Orchids," Vols. i-ii).

Thus *Th. rubra*, Fitz., replaces *Th. carnea*, R. Br., in the various "Floras" and other publications listing the Orchidaceæ of Victoria, South Australia, Western Australia and Tasmania. Moreover, *Th. carnea*, R. Br., replaces *Th. Elizabethæ*, F. Muell, in works on Victorian plants; so we have *Th. carnea*, R. Br. (synonym, *Th. Elizabethæ*, F. Muell.).

The flowers of *Th. carnea* vary somewhat in colouring, being variously described as red-pink, flesh-pink, or cream, the last-mentioned shade having red-brown markings. Those of *Th. rubra* are likewise variable, usually red (ruby-red) flesh (or salmon), pink or cream (as in *Th. carnea*). As in all other species of *Thelymitra*, the flower is likewise diverse in size.

1. "Aust. Orch." Pt. 1. Val. 2.

2. "Prodromus" (1810), p. 314.

3. Vic. Nat. Vol. vii. (1890), p. 116; Trans. Roy. Soc. S. Aust., Vol. li., (196), p. 5; "Fl. Vic." (1930), Ewart, p. 332.

THE TIGER CAT ON WILSON'S PROMONTORY

By J. A. KERSHAW, C.M.Z.S., Hon. Zoologist, National
Museum, Melbourne

Does the Tiger Cat (*Dasyurus maculatus*) exist in the National Park at Wilson's Promontory?

Some fifteen years ago one of the Park rangers, while clearing a track in the heavily timbered ranges, reported having seen a strange animal in the scrub which, from his description—"something like a domestic cat but more heavily built, with white spots on the body"—at once suggested the Tiger Cat.

In company with the Ranger I made several visits to the locality, but although close searches were made, no trace of the animal was found, nor has it been seen since.

When the Promontory was reserved in 1908 as a permanent sanctuary for native fauna and flora, little was known regarding its fauna, and with the object of introducing such as did not already exist there, I made close inquiries among the local cattlemen, prospectors and skin-hunters regarding the Promontory and its fauna generally. Their interest, however, had been chiefly concerned with those animals whose skins were of marketable value, and their knowledge of the smaller species was very vague. Rat-Kangaroos, Bandicoots, Native Cats, and the smaller marsupials were unknown to them.

That the Tiger Cat did exist on the Promontory at one time is indicated in a letter recently found in some early files at the Museum. The letter, which is dated February 10, 1869, was written by the late Baron von Mueller to Sir Frederick McCoy, then Director of the National Museum, and is of interest only for its reference to two marsupials, both of which are now extremely rare.

Referring to the Banded Ant-Eater (*Myrmecobius fasciatus*), von Mueller says: "I saw this neat little creature on Lake Torrens (300 miles north of Adelaide) in 1851, but never secured a specimen." *Myrmecobius* formerly inhabited South Australia and the southern districts of Western Australia. In South Australia it has probably ceased to exist, and in Western Australia it has become very rare and appears to be approaching extinction.

At the close of his letter the Baron says, altogether too briefly: "*Dasyurus maculatus* I noticed at Wilson's Promontory in 1853."

This is the only record I have been able to find of the occurrence of the animal on the Promontory. The heavily timbered ranges, with their dense undergrowth, are practically unexplored and are eminently suited for its existence. Although at one time fairly abundant and widely distributed in this State, it was not seen for many years and was thought to have disappeared. In

1921, however, a specimen was sent to the National Museum from Apollo Bay, and it has since been found to exist throughout the Cape Otway district.

While it would be extremely interesting to find it has survived on the Promontory, it is very desirable to ensure its preservation, and with this object efforts are now being made to obtain specimens for liberation there.

DO YOU KNOW VICTORIA?

Early in the last century, a lady giving a philosophical address before a learned society in London, startled her audience by affirming, "I accept the Universe!" Thomas Carlyle promptly interjected, "You had better, Madam; you had better!"

In a somewhat similar state of lofty detachment, most of us "accept" Victoria. It is a geographical expression; a place in which we live, play golf, or collect our interesting natural history objects. If we are more aesthetically inclined, the State is a series of views, vistas and scenery—placid or rugged, gentle or harsh, pleasant or unpleasant according to our varying standards and temperaments.

This attitude to our country is probably due to the appallingly uninteresting manner in which geography and physiography (if any) were presented to us. On the other hand, as Professor Skeats points out in his "Foreword" to Dr. E. S. Hills' recently published work "The Physiography of Victoria": "The eyes only see what they are trained to observe. The uninstructed observer sees a picturesque and varied landscape and gets, no doubt, aesthetic enjoyment from its contemplation. But the trained student gains, in addition, great intellectual satisfaction from his capacity to interpret the landscape, to identify the nature and structure of the rocks composing it; and to visualize the processes by which present land forms have slowly developed."

There has been much work done on Victorian physiology in the past but publication has almost entirely been in survey reports and various "Proceedings" and is too difficult to assemble by the ordinary student if he is without geological training. Books such as Gregory's "Geography of Victoria," and T. S. Hall's "Victorian Hill and Dale" have been useful, but left a good deal for the student to puzzle over. Dr. Hills, however, has succeeded in producing a text-book which should appeal not only to the advanced student but also to the beginner, and indeed to anyone who wishes to know something about his environment.

"The Physiography of Victoria" is a handy volume of 292 pages and contains 350 plates and diagrams. The author has selected typical views of Victorian land forms to illustrate the phases he so ably describes. Most of these are accompanied by a block diagram which clearly explains the views. The text is a fine example of condensation and no one should have any difficulty in understanding the processes with the text and illustrations side by side. Dr. Hills begins wisely with two chapters on the geological structure of the earth and an explanation of the principles of geomorphology. There are also chapters on "Streams and their Work," "Normal Cycle of Erosion," "The Arid Cycle," "Glaciation," "Faulting and Earthquakes," "Coasts," etc. He concludes with a chapter on "The Growth of Victoria," describing developments from the Mesozoic to the Recent.

Naturalists will be delighted with the range of the work, which literally covers the whole of the State. The Locality Index includes well over 400

Victorian place-names and it is difficult to recall any interesting physiological feature of phenomena in Victoria which is not included and explained. Although the technical terms used are explained in the text, the inclusion of a glossary in future editions is desirable to facilitate reference.

This work seems to be destined to become one of those indispensable reference books that are found on every naturalist's shelves. It is not written in the so-called "popular" style, but it a real text-book; nevertheless the ordinary reader who tours his State will have no difficulty in solving some of his problems.

The final paragraph of Dr. Hills' book reads: "There is a complex relationship amongst natural physiographic processes, and when the relationship is disturbed by man in an attempt to obtain some desired result, other and usually unwanted changes are also inevitably brought about. The deeper his understanding of natural processes and the greater willingness to co-operate in carefully tending the land, the better will he be able to avoid that ultimate complete despoilation of the countryside which has been the fate of some once fertile areas in the Old World."

This understanding will strengthen our Club in its advocacy of the prevention of grazing on the high lands, the reservation of primitive areas and a conservation policy generally.

("The Physiography of Victoria: An Introduction to Geomorphology," by E. Sherbon Hills, PH.D., D.Sc., University of Melbourne; published by Whitcombe & Tombs; price, 8/6.)

G. N. H.

PUBLICATIONS RECEIVED

Tr. and Pr. of the Royal Society of Victoria, Vol. LII, Pt. 1.

Memoirs of the National Museum, Melbourne, No. 11, contains a comprehensive paper, with numerous illustrations, on "The Freshwater Mollusca of Victoria," by C. J. Gabriel; another on "The Graptolites of Australia: Bibliography and History of Research," by R. A. Keble and Professor W. N. Benson, and "Some Artifacts from the Territory of New Guinea," by D. A. Carey.

Proc. of the Linnean Society of N.S.W., Vol. LXV, Pts. 1-2.

Records of the Australian Museum, Vol. XX, Pt. 5.

The Australian Museum Magazine, Vol. VII, No. 4, deals with "The Mystery Animals of Australia" (Gilbert Whitley), the new Ribbontailed Bird of Paradise from New Guinea, with coloured plate; Shells (Purples), by Joyce Allen, Insect Habitats, and Stick, and Leaf Insects.

The Australian Journal of Science, Vol. II, No. 4, has a short paper on "The Ecology of the Aboriginal Inhabitants of Tasmania and South Australia," by Professor J. B. Cleland, and one on "The Origin and Migration of Australian Marsupials," by C. Anderson. No. 5 mainly deals with "The Urgency of Biological Survey in Relation to Faunal and Economic Problems," by Ellis Troughton.

Australian Wild Life, the 28th Annual Report of the Wild Life Preservation Society of Australia (Sydney) gives an account of Sanctuaries and National Reserves, and seeks a new deal for the Koala.

The Australian Orchid Review (The Orchid Society of N.S.W.), Vol. 5, No. 1, is well illustrated. Attention is drawn by H.M.R.R. to the fact that twenty-four of our terrestrials also occur in New Zealand; and to the wide ranging of *Pterostylis curta* (all States), *Pt. rufa* (all except Tasmania), *Dipodium punctatum*, *Thelymitra aristata*, and *Lyperanthus nigricans*.

The Victorian Forester, Vol. II, No. 4.

The Emu, Vol. XXXIX, Pt. 4, contains "A Biological Survey of the Peak Hill District," by E. C. Chisholm, and papers on the Jacana, the Spotted Bower-bird of Victoria, and the White-breasted Petrel of S.A.

The South Australian Ornithologist, Vol. XV, Pt. 5.

The South Australian Naturalist, Vol. 20, No. 2, has a paper on "The Living Bird," by Oscar Symon and H. T. Condon, which should interest all bird observers.

The West Australian Naturalist, Vol. 8, No. 1 (New Series).

The North Queensland Naturalist, Vol. VIII, No. 6.

Contributions from the New South Wales National Herbarium is mostly taken up with Joyce W. Vickery's "A Revision of the Australian Species of *Deyeuxia*, with Notes on the status of that genus and *Calamagrostis*." This latter genus is, in the strict sense of the term, almost entirely confined to the northern hemisphere, only one species extending south into Africa. The species under it in our Census, with the exceptions of *filiformis* and *rudis*, which seemingly will revert to their old place under *Agrostis*, are thus to be regarded as belonging to *Deyeuxia*; *nivalis*, however, becoming *crassiuscula*, Vickery. Miss Vickery describes twenty-eight species of *Deyeuxia*, almost all montane; seventeen are new, and five of these are Victorian: *monticola* (Roem and Schult), Vickery on Mt. Buffalo, *Benthamiana*, Vickery on Buffalo and Wilson's Promontory, *scaberula*, Vickery on Mt. St. Bernard, *contracta* (F.v.M.) Vickery on Buffalo, Mt. Dandenong and elsewhere, and *brachyanthera* (Stapf), Vickery on Buffalo and Grampians.

Government Botanist, Queensland: Botanical Reprints 4 and 5.

Official Year Book of the Commonwealth of Australia, No. 32, 1939.

Commonwealth Forestry Bureau Bulletins 24, 25, 26.

New South Wales Department of Mines. Mineral Resources, No. 37.

Journal of the Council for Scientific and Industrial Research, Vol. 13.

The Melbourne Walker, Vol. II.

Sydney University Reprints, Zoology, Ser. XIII, Geology, Ser. V.

Annual Report Queen Victoria Museum, Launceston, 1938-1939.

Kew Bulletin, 1940, No. 1.

Tr. and Pr. Royal Society of New Zealand, Vol. 69, Pt. 4.

Records of the Canterbury Museum, Vol. II, No. 6.

Bulletin of the American Museum of Natural History, Vol. LXXVI, Pts. 3-6.

The Ohio Journal of Science, Vol. XL, No. 1.

The Philippine Journal of Science, Vol. 71, No. 3.

Journal of Entomology and Zoology, Vol. 31, No. 4.

University of California Pubs. in Zoology, Vol. 43, Pts. 10-13.

Proc. United States National Museum, Vol. 87, Nos. 3072-3074.

Pr. Boston Society of Natural History, Vol. 41, No. 7.

Lloydia, Vol. Nos. 1-3.

Canada Dpt. of Mines Geological Survey Papers, 39.

Lingnan Science Journal, Vol. 19, No. 1.

Santa Barbara Museum Leaflet, Feb., 1940.

Rev. do Prod. Animal, Rio, Vol. V, Nos. 1-6.

Dodriguesia, Anno IV, No. 12.

Arquivos do Serviço Florestal, Rio, Vol. I, No. 1.

Additions to Library

Donated by The Royal Society of Victoria:

Tr. and Pr. of The Royal Soc. of S.A., Vols. II, III, IV, V.

Jour. of Royal Soc. of N.S.W., Vol. X.

Pr. Linnean Soc. of N.S.W., Vols. I, No. 4; II, III, Nos. 1, 2; V, Nos. 2, 4; VI, Nos. 1 and 4.

Donated by Mr. Charles Barrett: "A Short History of Ancient Egypt" (Arthur Weigall), "Science Front, 1939" (F. Sherwood Taylor), "The Kruger National Park" (C. A. Yates), "Country Men" (John Moore), "The Discovery of Man" (Stanley Casson), "Adventures in Bird Protection" (Thomas Gilbert Pearson), "Children of Tane" (Mona Gordon), "My Jungle Trails" (A. Hyett Verrill), "Science Marches On" (Walter Shepherd).

Donated by Mr. C. French: "Beetles and Flies" (F. M. and L. T. Duncan).
Purchased:

Tr. and Pr. Royal Soc. of S.A., Vols. IX, X, XIII.
Austn. Assn. for the Advcmnt. of Sc., Vol. IX.

MR. G. M. MATHEWS'S VISIT

Naturalists in general and ornithologists in particular have been glad to welcome Mr. Gregory M. Mathews, who spent a fortnight in Melbourne during August. It is 27 years since Mr. Mathews last visited this, his native country, from his home in England, and he was of course glad to renew old acquaintances and make many new ones.

As recorded earlier in this issue, Mr. Mathews was the guest of the Victorian Field Naturalists' Club on August 12. On August 14 he was the guest at dinner of the Council of the Royal Australasian Ornithologists' Union, and afterwards addressed members of the R.A.O.U., together with representatives of the F.N.C. and other societies. In the first part of his address he described the splendid ornithological library which he has presented to the Commonwealth, and in the second part he discussed problems of nomenclature and answered many questions on the subject. Most of the questions centred upon the splitting of genera, and Mr. Mathews defended his extensive "splitting" but at the same time revealed a fairly open mind on various aspects.

On August 19 Mr. Mathews was a guest of the Bird Observers' Club at "An Evening with the Lowan" (an interesting address being given and splendid pictures shown by Mr. F. Lewis), and between whiles he was taken on several field excursions. He left for Adelaide and Perth on August 23, but expects to re-visit Melbourne later. The date of his return to England is indefinite.

Incidentally, Mr. Mathews signed the 12-volume set of his "Birds of Australia" in the possession of the F.N.C., which he was glad to see were so finely bound and well "housed."

NEW BIRDS OF THE TROPICS

As was generally expected, a good deal of interesting material has resulted from the Archbold Expedition to New Guinea in 1938-39—the one which culminated in the Expedition's flying-boat being "borrowed" by the Commonwealth Government for an experimental flight, by Captain P. G. Taylor, across the Indian Ocean. Three issues of the "American Museum Novitates," just to hand, give a preliminary summary of the ornithological results of the Expedition.

Perhaps the most interesting discovery is a new Bower-bird, for which a new genus, *Archboldia*, has been set up. The bird, *Archboldia papuensis*, is closer to *Amblyornis*, New Guinea's Gardener Bower-bird, than it is to the Bower-birds of Australia. Nothing is known as yet of its bower-building habits. Other striking discoveries include a new species of Robin (*Petroica archboldi*) and a new species of Friar-bird (*Philemon brassi*).

Many new sub-species, related to birds in Australia, are also recorded, among them a Fairy Wren (*Malurus*), a Kestrel, a Coot, several Nuthatches (*Neositta*), a Whistler (*Pachycephala*), a Tree-creeper (*Climacteris*), a Sun-bird (*Cinnyris*), a Scrub-Robin (*Drymodes*), a Flycatcher (*Microeca*), a Logrunner (*Orthonyx*), and a Quail-Thrush (*Cinclosoma*).

A separate publication records interesting notes on the displays of two Birds of Paradise. One of these, *Diphyllodes magnificus*, clears a space on the ground for the purpose, apparently after a fashion of our Tooth-billed Cat-bird. Mr. A. L. Rand, author of the observations, refers to this cleared space as a "display ground" and (somewhat loosely) as a "bower."

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H. C. E. Stewart, J. H. Willis.

EXCURSIONS

SATURDAY, SEPTEMBER 14.—Maranoa Gardens. Leader: Mr. F. Chapman, A.L.S., F.R.M.S. Subject: Garden-grown Australian Native Plants. Travel by Mont Albert tram from Collins Street and alight at Parring Road. Meet at Gardens at 2.45 p.m.

SATURDAY, SEPTEMBER 21.—Ringwood to Mitcham. Leader: Mr. Chas. French. Subject: Wild-flowers and Insects. Travel by the Healesville train from Princes Bridge at 1.35 p.m. or by the Fern Tree Gully train from Flinders Street at 1.38 p.m. Book to Ringwood. Fare, second return, 1/11.

SATURDAY, OCTOBER 5.—Bayswater. Leader: Mr. F. E. Wilson, F.E.S. Subject: Entomology. Travel by the Fern Tree Gully train from Flinders Street at 1.38 p.m. Fare, second return, 2/3½.

SATURDAY, OCTOBER 12.—Footscray Gardens. Leader: Mr. W. H. Nicholls. Subject: Garden-grown Australian Native Plants. Travel by train from Flinders Street at 2.0 or 2.15 p.m. (Williamstown line). Later trains at 2.27 and 2.45 p.m., also 2.42 p.m. (for St. Albans). Fare, second return, 7d.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

VICTORIAN SEA SHELLS, by C. J. Gabriel, describing 150 shells, all to be found in Port Phillip, is abundantly illustrated. Price, 1/6.

A CENSUS OF VICTORIAN PLANTS, by the Plant-names Committee of the Club, contains the vernaculars of all our plants. Price, 3/6.

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PESCOTT: *The Dahlia in Australia*, 2/6.

TAVISTOCK: *Parrots and Parrot-like Birds in Aviculture*, 27/6, new.

BARRETT: *In Australian Wilds*, 10/6 at 8/6.

COX: *Evolution of the Australian Merino*, 21/- at 7/6.

EDGEWORTH DAVID & TILLYARD: *Memoir on Fossils of the Late Pre-Cambrian (Newer Proterozoic) from the Adelaide Series, S. Aust.*, 7/6 at 2/6, new.

HOSKING & NEWBERRY: *Intimate Sketches from Bird Life*, 8/6, new.

GRIMWADE: *Anthography of the Eucalypts*, new, £2/2/- at 17/6.

McKEOWN: *The Land of Byamee*, 6/- at 3/6, new.

CHALMERS: *Birds Ashore and Aforeshore*, new, 25/-.

DRANZLIN: *Abbildungen der in Deutschland*, 1904, in German, 32/6.

MORRIS: *Orchids of Ontario*, half-leather, 10/6.

LOWNE: *The Blowfly* (Anatomy, Physiology, Morphology and Development), 1890-92, 2 vols., £2/7/6.

VESEY-FITZGERALD: *A Book of British Waders*, new, 8/6.

MOGGIDGE: *Harvesting Ants and Trapdoor Spiders*, with supplement, 1873, 14/6.

HANSEN & SORENSEN: *On Two Orders of Arachnida*, 1904, £1.

HULME: *Butterflies and Moths of the Countryside*, 10/6.

LE SOUEF & BURRELL: *The Wild Animals of Australasia*, 20/-.

COMSTOCK: *An Introduction to Entomology*, 2nd complete ed., 1925, 30/-.

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OCTOBER, 1940



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Exhibition of
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31 Victoria Street

(Opposite the Trades Hall.)

14th October, 1940

3 p.m. to 10 p.m.



During the evening illustrated lecturettes will be given by officers of the Forests Commission and Messrs. I. C. Hammet and H. Reeves.



Admission Free

Collection in aid of the Australian Comforts Fund.

The Victorian Naturalist

Vol. LVII.—No. 6

October, 3, 1940

No. 682

PROCEEDINGS

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday, September 9, 1940. The President, Mr. L. W. Cooper, presided, and about 90 members and friends attended.

BEREAVEMENT

The President referred to the recent death of a Club member, Mrs. A. S. Kenyon, and members stood in silence as a tribute to her memory.

ANNOUNCEMENT

The President announced that Mr. V. H. Miller was progressing well and was now at home.

SUBJECT FOR THE EVENING

The subject, as arranged, was an illustrated address on "The Wild Flowers of the European Alps," given by Mr. E. E. Pescott. It was beautifully illustrated with coloured pictures, which, together with the address, were much appreciated.

CORRESPONDENCE

(a) A letter from Hall's Gap Progress Association stating their Flower Show would be held on September 28 and 29.

(b) Reply from Mr. A. S. Kenyon to letter of sympathy sent by the President.

REPORT OF EXCURSION

The recent excursion to the Violet Farm was reported on by the President.

ELECTION OF MEMBER

Mr. A. L. Scott was elected as an ordinary member of the Club.

GENERAL BUSINESS

(a) Forthcoming Excursions.—These were spoken of by their respective leaders.

(b) Wild Nature Show Announcement.—The Show will consist of cultivated native plants, and will be held at the Horticultural Society's Hall on October 14, 1940. Members are requested to attend in the morning.

(c) Books Missing from the Library.—Members are requested to return any library books that they have had out for over two months. Many books are out without being signed for, and their return is necessary for stock-taking purposes.

NATURE NOTES

Mr. C. J. Gabriel mentioned a Blue Wren flying on to the bonnet of his car.

Both Miss Wigan and Mr. E. S. Hanks suggested it would be on account of the bird's seeing its reflection in the wind screen.

Mr. R. G. Painter mentioned that in a cultivated specimen of *Eriostemon obovalis* some flowers showed six petals and some seven petals. Six-petal flowers showed two stamens and the seven-petal flowers only one stamen.

Mr. E. E. Pescott stated that whenever a flower commences to double or increase its stamens there is adjustment in its other parts. It is quite common for flowers to have an alteration in petals.

Mr. F. P. Morris said it was rather unusual for the duplication of the stamens to take place.

EXHIBITS

Mrs. C. L. Barrett:—Flowering specimens of Beech Orchid (*Dendrobium falcorostrum*), Pink Rock Lily (*D. kingianum*), Pencil Orchid (*D. Beckleri*), Tree Spider Orchid (*D. tetragonum*), and White Feather Orchid (*D. aemulum*).

Mr. R. G. Painter:—Garden-grown specimens of the following—*Acacia leprosa*, *A. myrtifolia*, *Boronia megastigma*, *Pultenaea Gunnii*, *Grevillea Thelemaniana*, *Dendrobium falcorostrum*, *D. gracillimum*, *Sarcophilus falcatus*, *Pterostylis alpina*.

Mr. Chas. Daley:—Home-grown native flora—*Thryptomene calycina*, *Micromyrtus ciliatus*, *Calytrix Sullivani*, *Lhotskya genetylloides*, *Prostanthera rotundifolia*, *Correa rubra*, *Chorizema cordata*.

Miss M. L. Wigan:—Black Land Snail (*Paryphanta atramentaria*). It was pointed out by Mr. C. J. Gabriel that this snail is of particular interest owing to the fact that in Gippsland and the Dandenongs the creature is bright scarlet in colour, and that in the Otways it is of a light grey colour. The colours are strictly confined to the localities mentioned.

A NEW VARIETY OF *LIPARIS REFLEXA*

By W. H. NICHOLLS, Melbourne

Liparis reflexa is a well-known rock-dwelling orchid common to the coastal areas of New South Wales and Queensland. Its present known distribution, according to Rupp,¹ is Southern Queensland southward, "at least as far as the Shoalhaven" (N.S.W.).

The flowers of this plant (like those of several other members of the genus endemic to Australia) diffuse a most unpleasant odour, which in the confines of a heated glass house is peculiarly nauseating.

For the present, however, we are not concerned with the known habits and peculiarities of the species, but with a new variety and with the apparent strange behaviour of one of two colonies of pseudo-bulbs which the writer collected from the rock crevices at the head of the Minyon Falls, Night Cap Ranges (via Brunswick), in northern New South Wales.

In these ranges *L. reflexa*² grows, in more or less extensive masses, on rocks bordering the streams, also in congenial positions on the cliff faces in the dark ravines, etc.

The flowering period of *L. reflexa* is during the autumnal months; hence, when these particular specimens were collected (Sep., 1936) no flowers were apparent, but during the subsequent flowering season, the plants produced abundance of bloom. Then, it was observed the flowers were *much smaller* and more abundant than is usual for *L. reflexa*; also, the racemes were longer.

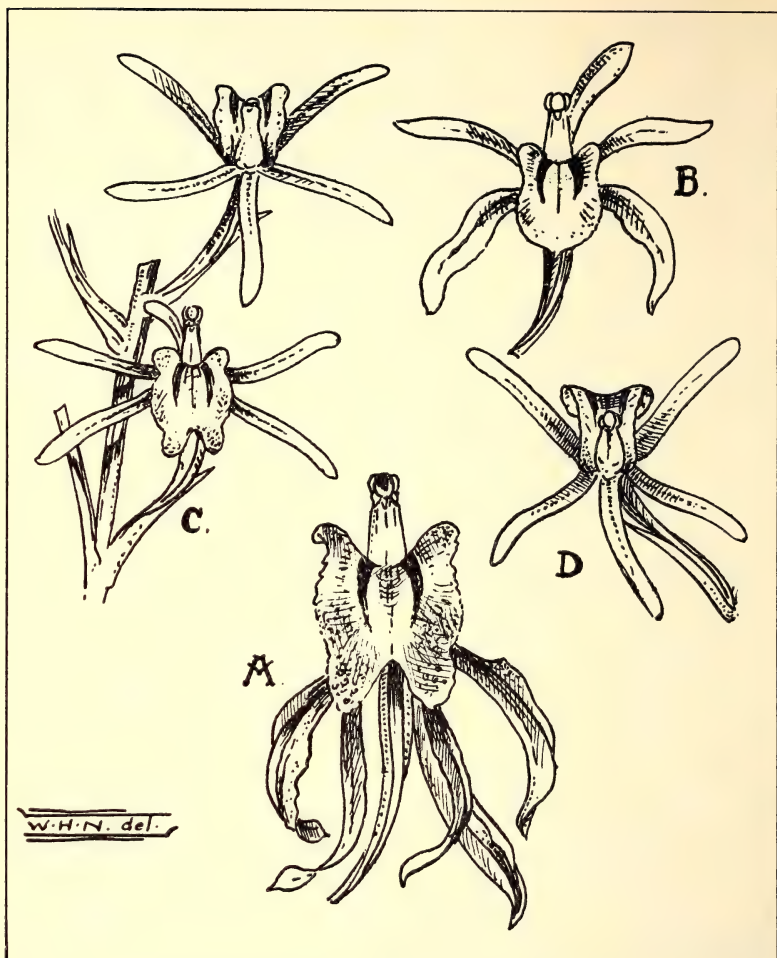
Again, the flowers were yellowish—turning to a bright yellow at maturity, whereas those of *L. reflexa* are always inclined to the green (described as "yellowish-green" or "greenish-white.")

What was perhaps the more strange, only the dorsal segment assumed the relaxed position, which brought it into line with the lateral sepals and the petals. Thus the flowers resembled, more than anything else, diminutive golden-hued spiders with legs outstretched.

In the typical flowers (which are much larger) all of the segments of the perianth relax (*reflex*—hence the specific name.)

This movement takes place immediately after the buds expand, and is very pronounced: They assume a position parallel with the ovary. Thus each flower presents a most bedraggled appearance. (See Figure A.)

An examination of the diminutive flowers (then and during the following flowering seasons) failed to reveal any important difference that would serve to separate them (*specifically*) from the larger and typical form, other than the apices of the sepals and petals, which are obtuse, whereas in the larger flowers they are acute.



Liparis reflexa Ldl. and variety *parviflora*, n. var.

The conclusion arrived at during the initial examination, and subsequently, was that these "Minyon plants" represented a new variety of Lindley's form, which must not be confounded with F. Mueller's *L. cuneilabris*, which species is distinct,³ and bears larger flowers, etc.

The flowering period of 1940, however, heralded an additional surprise. The larger plant⁴ (plant colony?) in addition to producing a copious supply of the tiny yellow "spiders," as previously, yielded also a sturdy and typical raceme of the *typical reflexa*

flowers! The other plant gave (as it had all along) the small yellow flowers of the new variety; but this particular plant was collected from the rocks adjacent (but far removed from) the waters of the stream.

Then, the question arose, is the new variety a case of bud variation ("sport") or some strange trait of *L. reflexa*? or does this larger mass of pseudo-bulbs and foliage represent a more or less conglomerate mass of pseudo-bulbs which have been the sport of flood waters, eventually congregating in the position at the head of the falls, whence they were removed by the writer.

Whatever the reason for the 1940 surprise, it is abundantly clear that the diminutive yellow flowers represent a distinct variety of Lindley's flower, and are worthy to be known as such. Thus they are here offered as *Liparis reflexa*, Ldl., variety *parviflora* (n. var.).

Flores numerosi, parvi; perianthi-segmenta dilatata, obtusa.

Habitat: Night Cap Range (via Brunswick), northern New South Wales.

REFERENCES.

1. "Guide to the Orchids of N.S.W." (1930), p. 14.
2. *L. reflexa*, Ldl., is on record for this locality—the plants of the new variety are identical in all respects with those of Lindley's type form.
3. See "North Queensland Naturalist," IV (June, 1936), pp. 34-35.
4. Plant colony now in possession of Botany School, Melbourne University.

KEY TO FIGURES.

A.—A flower of the typical form.

B.—Same immediately after expanding.

C and D.—Flowers of new variety.

(Figs. A and C show comparative size of the two forms.)

NOTES ON THE ROSE APHIS

The family of Aphidae contains many species or varieties. Nearly every plant has its own particular Aphis. Aphides are all minute, soft-bodied and generally long-legged. The mouth is furnished with a curiously constructed beak for sucking the juices of plants. The life history of these insects is very complex. The winter eggs, or larvae, lie dormant during the cold in crevices, or in the trunks, or hidden underground on the roots of the host plants. As the warm weather approaches they crawl up the trunks, cluster round the young shoots, leaf-buds, etc., and, sticking their sharp beaks into the tissue, suck the sap. They give birth to larvae which grow rapidly, and in turn (through virgin females) bring forth fresh broods of live larvae, which, in the course of several generations, develop two pairs of large transparent wings. They consist usually of both sexes, though in some species the male is wanting. The last generation flies away in swarms. Before dying the insects deposit eggs which carry on the cycle of their life into the next summer.

During the last few weeks Rose Aphids have increased rapidly, quite a number of small dark-coloured varieties being amongst the young green variety.

CHARLES FRENCH.

A NEW VICTORIAN FERN RECORD

By N. A. WAKEFIELD, Genoa, Vic.

The far east of Gippsland has yielded another fern for our Victorian lists. On July 27 the writer found a plant of *Asplenium adiantoides* about two miles to the south-east of Genoa.

The plant was in a rather remarkable situation; it was growing as an epiphyte on the wall of a crevice in a great granite outcrop on the side of a forest ridge. The rock there contains a network of crevices, some being fifty feet deep and several times as long, and generally about three feet wide. All their extensions have not yet been investigated owing to lack of light; but the deeper ones seem to be devoid of plant life and to be inhabited only by bats. On the floors of the more open caves grow an abundance of Prickly Rasp-Fern (*Doodia aspera*); and the walls are covered with Streaked Rock Orchid (*Dendrobium striolatum*) and *Cyclophorus serpens*.

The description of the plant is as follows:—

Asplenium adiantoides (L.), C. Chr., Sickie Spleenwort. Plant tufted; fronds up to 2 feet long, glabrous, pinnate; pinnae stalked, lanceolate, pointed, lobed, toothed, about 3 inches long and leathery; generally one row of long sori diverging from and opening towards the midrib, and other shorter sori nearer to and opening towards the margins. Distribution: Vic. (E., Genoa, v.r.), N.S.W., Q'ld., N.Z., Oceania, tropical Asia and Africa. The specific name here given is synonymous with *A. falcatum*, Lam.

In "New Zealand Ferns," H. B. Dobbie describes it as "an exceedingly handsome decorative species, varying greatly in size and shape, growing everywhere—the trunks of trees, rocks, perpendicular and overhanging banks, . . . and often seems to subsist on nothing more substantial than air. . . ."

A form with longer points to the pinnules was described as *A. caudatum*, Forst., but Bentham and Hooker considered it a form of *A. falcatum*.

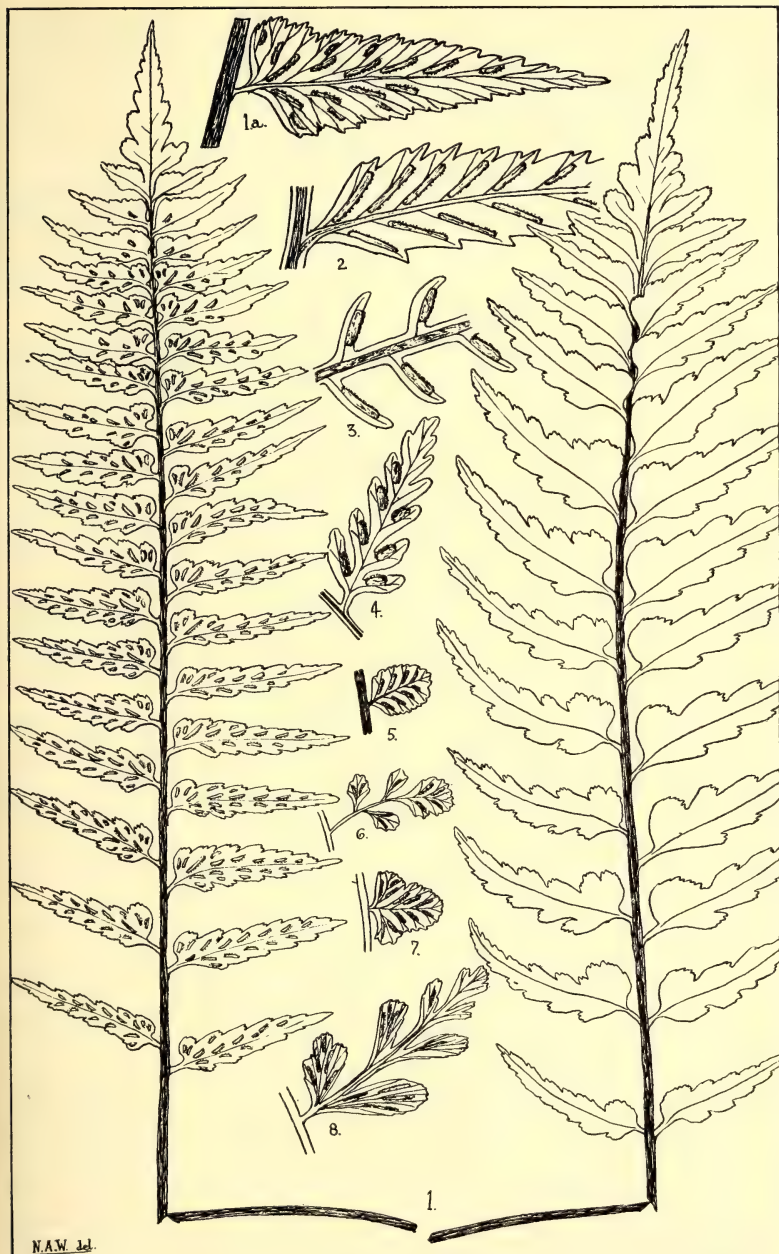
The accompanying illustration shows a barren and a fertile frond, and a pinnule of *A. adiantoides* (Figs. 1 & 1a); and for comparison, pieces of the other Victorian Spleenworts are shown as follow:—

Fig 2.—Part of a primary pinna of *A. scleroprium*, Jacq. & Homb., Shore Spleenwort, which is confined to coastal localities on Wilson's Promontory and adjacent islands.

Fig. 3.—Part of a primary pinna of *A. flaccidum*, Forst., Weeping Spleenwort, which grows on treeferns, trees and rocks, in fern gullies and on rock outcrops of South and East Victoria.

Fig. 4.—Secondary pinnule of *A. bulbiferum*, Forst., Mother Spleenwort, which is widespread in all but dry districts, growing as an epiphyte or terrestrial, in mountain gullies.

Fig. 5.—A primary pinna of *A. Trichomanes*, L., Black Spleenwort, which is found on moist rocks in isolated districts of S.W., N.E. and E. Victoria.



Asplenium, spp.

Fig. 6.—A primary pinna of *A. Hookerianum*, Colens., Maidenhair Spleenwort, which was recorded for Victoria by Baron von Mueller from "Upper Hume River at 4,000 feet and Colac Ranges" about 70 years ago, but has not been found since in this State.

Fig. 7.—A primary pinna of *A. flabellifolium*, Cay., Necklace Fern, which grows on almost all rock outcrops throughout the State.

Fig. 8.—A small primary pinna of *A. praemorsum*, Swartz, Forked Spleenwort, which once grew at Darlot's Creek, near Portland, and in the Grampians, and was recently found on Lady Julia Percy Island, near Portland.

All are shown half natural size, except Fig. 1, which is one-sixth normal size.

BIRD NOTES ON THE AIR

By CHAS. DALEY, B.A., F.L.S., Melbourne

Variety and frequency of bird cries vary much in accord with season, time of day, nature of environment, food and water supply, nesting facilities and other circumstances more or less affecting feathered life. In a fairly crowded suburban area there is, of course, not the number of birds which one finds where attractive parks, gardens and water surfaces invite bird-life. However, in all suburbs, some birds are to be found in tuneful call on the air at some time in the day.

As a rule the earliest notes to be heard at dawn are those of the cheerful twittering of sparrows from the eaves; but in the spring, when the blackbird seems to be full of energy as an early bird, it sounds from a roof or wireless pole a preliminary reveille, which startles the sparrows earlier into action.

A monotonous but insistent bird cry, limited in range, but productive of many crooning mournful notes in response, is that of the sleek and well-preened Java doves, who, even before the dawn, and after sunset, reiterate their plaint. Once in a while the hearty matutinal laugh of the kookaburra, the "bushman's clock," may be heard mingling with the tintinnabulation and rattle of the milkman's cart on its early rounds.

Joyfully also a pair of magpies, returning from a prolonged annual "fly-about," announce their return at a homely pine tree, their nesting-place; from which also periodically one can hear the varied and expressive notes of two mud-larks intent on renovating their last year's shapely nest.

During the daytime bird cries naturally accord with fresh air, bright sunshine, active movement. The pleasantly intimate chatter of sprightly sparrows and the saucy garrulity of pert starlings pass almost unnoticed. Less frequent visitants and casual callers proclaim a brief sojourn with their distinctive cries. Rosellas and lories at rare intervals in hurried flight broadcast their arresting notes. The guttural call of the wattle-bird will occasionally sound on the ear. Between August and October the bronze cuckoo usually announces its unwelcome presence. A blue wren, with its more

soberly arrayed companions, may suddenly flit up from nowhere, and be off again with a minimum of vocal outcry. With the first sunny day after winter suddenly we hear a welcome "tweet" as the first returning swallow in perfection of flight flits past in its graceful curving sweep.

The blackbird, when in full rich note, delights with its tuneful and varied harmony, with inclusion of notes that "to other lyres belong." Its mimicry encroaches upon the repertoires of other birds. It would be interesting to know if English blackbirds overseas repeat similar sounds; and if the frequent interpolation of "Pretty Joey"—a catch-cry so frequently and laboriously taught to parrots—is, as I am inclined to think, natural to both blackbirds and starlings. Apropos of the shapely blackbird's characteristic attitude as it graces our lawns, one might evidently think that from its alert poise we have derived the railway slogan—"Stop; look! and listen!"—which it so prettily exemplifies.

Wherever there are undisturbed open spaces of some acres, and on golf-links near the coast, we have another delightful songster in the English skylark, with its "profuse strains of unpremeditated art." We can see and hear as it mounts the sky how true is the poet's description of the lark, "which singing still dost soar, and soarest ever singest." Sometimes, too, we may hear on the air the song of an errant canary, obviously out of its bearings, or the notes of a stray goldfinch, another introduced bird.

Once or twice I have heard the rich notes of a grey thrush from arboreal gardens in the vicinity—evidently a young bird, its welcome song lacking the fulness which maturity brings.

The gang-gang cockatoos, which temporarily sought refuge from the bush fires of last year in city parks and gardens, are no longer in cry, having returned to their usual habitats. In the home street, however, we have two sulphur-crested cockatoos, occasionally vociferous, who have, under domestication, almost forgotten their "native wood-notes wild"; but shriek out meaningless words taught to them.

During night-time also certain bird-notes may be heard in the stillness. For the second time in 25 years, in wakeful hours I recently heard in city environs the persistent call of a mopoke, so rarely a suburban visitor. I roughly calculated the frequency of its monotonous call—one-and, two-and, "Mo-poke"; one-and, two-and, "Mo-poke," making repetition about twenty times a minute, or twelve hundred times per hour. Another infrequent night-call, but more irritant in its nature, is that of the pallid cuckoo or "scale-bird." Very occasionally a dainty black-and-white fantail, under the witchery of the silver moonlight, provides a modest meed of music—a pleasing interlude in the night watches with its reiterated "Sweet-pretty-creature."

Once I heard shrill out on the air the startled and startling notes of a plover in unusual midnight flight. Most musical and soothing of the night sounds is the soft attunement of the notes of swans a-wing in the darkness to the sheltered bay or some expanse of reedy mere. Some time ago I was puzzled as to the origin of a whistling note heard at night, presumedly from some bird unrecognized. Later I found that the sound was made by a whistling frog in the garden!

One morning, a few months ago, I heard the sound of many wings in motion—not of birds but of bees, a swarm of which had settled on a Virginia creeper. A neighbour kindly retrieved this swarm. Then a larger swarm clung to a lemon tree, where it stayed for three weeks, and a third swarm chose a vine for a temporary home, under which there was soon a number of dead bees, whether drones who had suffered for “stop work” tactics, or victims killed by soldiers of the rival swarm I could not determine. The second swarm flew off elsewhere, and an apiarist relieved us of the third contingent.

The birds mentioned, somewhat casually, by no means exhaust the list of those to be heard “on the air”; for unlike the wireless, nature seldom “closes down,” but seasonably and pleasantly, sometimes unexpectedly, varies the programme of tuneful harmony for the listening ear.

THE FAIRY WAX-FLOWER

A very appropriate illustration in this number of the *Victorian Naturalist* is that of the double-flowering Fairy Wax-flower.

In an early issue (Vol. I, page 50) appears an article by Dr. Woolls, of Sydney, on double flowers, in which he states that Baron von Muller had noted that double flowers occurred in *Eriostemon obovalis*. Dr. Woolls is inclined to think that the influences of settlement, such as manure from domestic animals and pollination by foreign bees, are contributing factors in inducing double flowers. On this point, however, he is not dogmatic.

Recently, in the garden of Mr. A. Lindner, near Horsham, a plant of *Eriostemon obovalis* was noted as having many flowers with six or seven petals, although most of the flowers on this bush had the usual five petals. It is thought that double flowers are caused by the increase in petals being due to transformation of the stamens and pistil. But a double variety raised by Mr. Rimington has many stamens, sometimes up to 30, but these varieties are under observation and a fuller account of them may be given later.

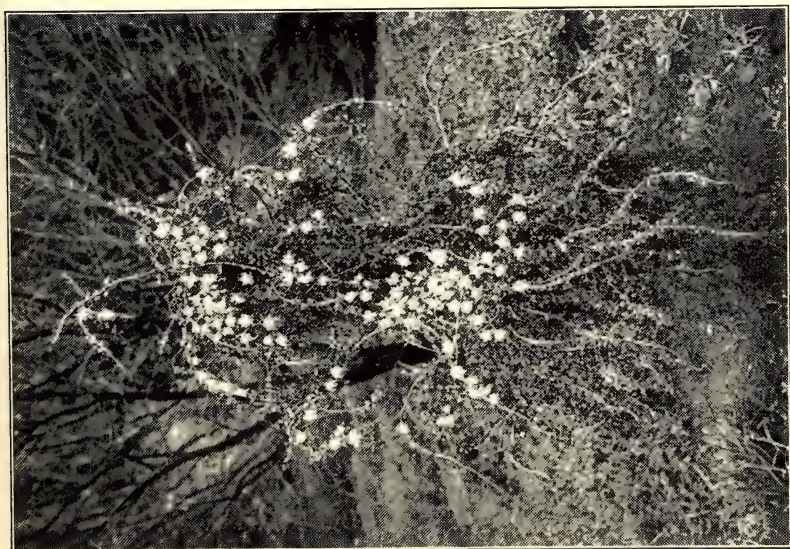
The plant shown in the illustration was photographed in the garden of Mr. Rimington, at Sassafras. Mr. Rimington, who is a well-known nurseryman, has been very successful in propagating this double variety, which he has named variety *J. Semmens* after a forestry officer who had noted the double variety at Sedgwick, near Bendigo.

It is interesting to note that the native name for the Fairy Wax-flower is *Euancondit*. Mr. E. E. Pescott, in the *Victorian Naturalist*, Vol. 39, page 175, mentions this fact, his authority being Mr. Armstrong, solicitor, of Kyneton, also supported by his own local enquiries. Mr. Armstrong published in 1895 a book called “*Euancondit*,” under the nom de plume of Henry Goldsmith, in which he describes “the pure white little flower of the hills,” *Euancondit*.
I.C.H.

PLATE XIII



The same plant at close range.



Double-flowered *Eriostemon obovalis*.

Photos by H. T. Reeves.

ANIMAL FOOD OF THE ABORIGINES

By G. N. HYAM, Melbourne

In my previous paper on the "Vegetable Foods of the Australian Aborigines" (*Vic. Nat.*, Oct., 1939), it was noted that the human race was divided into two main groups—the Food Producers and the Food Gatherers—and that the Australian came under the latter category which embraces those races which rely entirely on nature for their food supply, collecting plants or parts of plants for vegetable food, and the hunting of wild animals for meat.

It was also shown that the absence of agriculture does not necessarily mean a low intelligence; indeed, in many respects, and in certain definite directions, the reverse is the case. The development of a highly skilled tracking ability, a self-reliant and individualistic skill in the fashioning of tools, weapons, and a hunting technique, with an intensive knowledge of nature, inanimate and animate, is essential if the food-gathering race is to survive.

On the other hand, the cultivation and storage of food and the domestication of animals, if performed in favoured fertile country, undoubtedly leads to a development of a higher culture and the promotion of abstract ideas, decorative art and a more complicated system of government and tribal law. This is on account of the increased leisure gained by the avoidance of the almost perpetual hunt for food that absorbs so much of the life of the food-gatherer. But this again does not necessarily mean that the *individual* intelligence is higher in the food-producing race as in unfavourable and infertile country where cultivation is of necessity practised, the absorption of time in producing food is almost as great as that of the food-gatherer; and again, where cultivating races have occupied territory where conditions are more favourable, exploitation by slavery, peonage, serfdom and the evolution of a peasantry, often confined the really leisured class to a small moiety of the population. This phenomena can be seen from the earliest cultures right down to the present day.

The former paper also noted that the collection of plant food by the aborigines was almost entirely the function of the women and, conversely, in the obtaining of animal food it is the male aborigine who is mainly responsible for this duty. The interest in this branch of the aboriginal economy lies not so much in a mere list of the species of animal life used as food but in the weapons and methods of hunting employed, and the final preparation and use of the quarry for food or for other domestic purposes.

A complete list of animals used for food would be a considerable proportion of the entire Australian fauna. Practically all the marsupials and monotremes were used, and a list of the birds,

reptiles, fish, shellfish, and even insects would include hundreds of names. It is proposed, therefore, to note typical examples of how different tribes obtained their animal food, how they cooked them, and what portions were used for food and what was used for other purposes.

As in the consideration of the vegetable foods, we start with the assumption that the aborigine arrived in Australia with a knowledge of fire and the kindling thereof, also the technique of making very efficient weapons and the art of making stone implements by percussion and pressure flaking. His principal missile weapons for the killing of game were the spear, the spear-thrower or woomera, the throwing stick and boomerang, some or all of which have been used by other primitive cultures in similar form. The bow and arrow, so largely used by other hunting races, was entirely absent, but the degree of accuracy and length of range attained with the spear, in conjunction with the spear-thrower, largely compensated for this notable absence.

The woomera is said to give an effective range up to 150 yards. The majority of authorities consulted appear to agree that 60 yards was quite common, but Baldwin Spencer says that the usual killing range in Central Australia was only 25 yards. The differences in these estimates may be accounted for by the diversity of the types of spear and woomera used in the various localities. On the whole, it may be fairly estimated that the killing range was approximate to that of a 12 gauge smooth bore gun. Although there are many forms of woomera or spear-thrower, the actual principle is the same. Its function is to provide an additional joint to the arm and thus increase the leverage of the throw by one-third.

The spears, likewise, were of many different forms. Some used in N.S.W. were said to be 16 feet in length, but in other parts of Australia the average length of the hunting spears was 9 feet or under. In general, hunting spears were either reeds tipped with stone flakes or made out of some hard, straight-grained wood, the point of which was hardened by fire. There were also barbed and forked spears, particularly where the prey was fish. The latter were only about 4 feet long and were not used in the thrower. In examining these spears one cannot but admire the skill shown in the selection of the material, the delicacy of the balance and their perfect alignment.

The different types of throwing sticks and boomerangs are so diverse as to prohibit detailed description here, but the same skill is shown in achieving balance and accuracy of flight. It should be noted that the boomerang is found in two distinct types, the return and the non-return. The former was apparently used for birds in flight and, perhaps, for practice; and, of course, if the quarry was hit the return boomerang did not return to the feet of the thrower.

In addition to the various forms of missile clubs and throwing sticks there were various forms of clubs and waddies used for despatching wounded or trapped game. It would appear that all these types of missile weapons used for hunting were of a lighter type and of a different design than those used for tribal warfare, though it can be supposed that in time of emergency, their purpose was interchangeable. Training in the use of these weapons began at a very early age, the boys being provided with miniature replicas almost from infancy. Observers have noticed them throwing spears and throwing sticks as a game or "playabout" for hours on end, and it was this early training and constant practice that enabled the aborigines to acquire extraordinary accuracy of eye and aim, without which it would have been almost impossible for them to survive.

Similarly, their marvellous powers of tracking was the result of early training and constant practice. Some authorities would have us believe that this tracking ability of the aborigines was due to some special instinct, comparable to the homing instinct of pigeons, dogs and other animals. I think, however, it can be safely said that it is rather the result of early and intensive training, and acquired in a way similar to their expert marksmanship. Further, the aboriginal boy's education consists of very few subjects, the inculcation of abstract ideas of primitive man being deferred to young manhood at initiation. Therefore, in view of the daily practical demonstration of these few subjects allowing intensive instruction in such primitive arts as tracking and marksmanship, it is not altogether remarkable that such efficiency prevailed.

Thus the Australian aborigine, armed with his age-old but efficient weapons and his knowledge of the habits of his prey, was well equipped to maintain himself in a country where suitable game exists. Before he ate, however, he must "first catch his hare," and I will proceed to give a few examples as to how he provided the meat dishes on his very extensive menu.

In collating material for such a review, it is very noticeable that the early observers appeared to be very much more interested in the hunting side of the aborigine's life than with his collecting of vegetable foods. Relating to the former, there is an abundance of information and material, and in regard to the latter references are few and indefinite. The reason for this, probably, is that these early travellers and explorers were huntsmen and sportsmen themselves; therefore, they took a lively interest in such matters.

Assuming that there was no great carry-over of food supplies from the previous day, the tribe started out soon after daybreak for the chase and for forage. The whole tribe, except the aged, were in the hunt, generally completely breaking camp but occasionally working out from a fixed camp to which they

returned for the feast. At other times, it might be an individual on "walkabout" or a small family unit that went out; but in all cases the procedure was more or less the same. Being catholic in their tastes, they do not appear to have started out with any fixed ideas as to what the evening's menu should be, although they have been known to follow mobs of kangaroo, emu and other animals when the latter were travelling about from pasture to pasture. They also knew and noted the seasonal migrations of ducks, fish and the like.

On the hunt, the tribe travelled in extended order. In the front were the active men on the alert for signs and tracks of suitable game. Trailing behind were the women carrying the infants and household goods, and at the same time constantly on the search for suitable plants for food. Running here, there and everywhere were the children, equally alert and keen in the pursuit of such small game as lizards, snakes, and birds' eggs, stopping occasionally if they found a nice fat wood-grub which they usually ate on the spot, *au naturel*.

In country where game is so abundant as to allow a selection to be made, hunts for special animals such as kangaroo, wallaby and emu were organized. Sometimes these were in the form of battues, with the gins and children beating round a circle of a half-mile in diameter, gradually closing in and driving the mob towards the spearmen. At other times, a kind of crush-pen of brushwood, up to 100 yards in length and forming two sides of a triangle, was made. The mobs were driven in and those animals that were caught in the brushwood were promptly despatched with waddies.

A few more specific instances of the hunting methods used, particularly by individuals may be cited.

In pursuing the kangaroo, the hunter cautiously made his way through the bush or scrub, moving noiselessly and keeping his eye upon every animate and inanimate object in sight. He was careful to keep on the leeward side of the game when sighted, advancing a few steps at a time and keeping his body in one position. If the animal exhibited any uneasiness he remained still until it resumed feeding. He would continue to advance from tree to tree, and bush to bush, until within range. If the game was in an open grassy spot, he would retire until he could construct a screen of boughs; and with this in front of him, he would get within reach. If two men were available, they would both advance in opposite directions until nearly within range. One would make a slight noise by breaking a twig or the like, and when the 'roo ran in the opposite direction it was promptly speared by the other.

In hunting parties, it was etiquette that the first spear to strike the animal, however slight the wound, determined whose property

the dead animal should be, even if it happened to belong to a boy, who might be debarred by tribal law from eating such an animal. In this case, the animal was handed over to the father.

Wherever hunting was carried out jointly, communication was made entirely by signs and gestures until that hunt was over.

An ingenious method of taking the wallaby is noted amongst the tribes of the Gawler Ranges, South Australia. They made a long thin and flexible instrument like a fishing rod, to the thin end of which they attached the skin and feathers of a hawk, carefully arranged to represent a living bird. Taking this in hand, the hunter held aloft his mock bird, shaking the rod so as to simulate a bird in flight, at the same time uttering the cry of a hawk. This appears to have caused the wallaby to take refuge in the nearest bush, where he became an easy mark for a spear.

Possums were a much favoured meat. As these, in common with many other Australian animals, are nocturnal; and as the aborigine shared all other primitive people's fear of the dark, they had to be sought in daytime. The aborigine was able to tell from the marks on the bark of the trees whether the possum was "at home" or absent. If so, he was speedily chopped out with the stone axe. Wombats were another aboriginal delicacy.

William Buckley, the "Wild White Man" (whose published reminiscences of his 30 years' stay with an aboriginal tribe round Port Phillip Bay are interesting but not very accurate), in his descriptions of some phases of aboriginal life, may be said to be fairly reliable in his facts where food was concerned. He describes the methods of obtaining the wombat as follows: "They send a small boy or girl into the burrows feet first. When they touch the animal, they cry out as loud as they can, when the adults, who are on the surface with their ears to the ground, can tell with great precision where the lair is. A perpendicular hole is then made to strike the extremity of the burrow."

Eyre states that he observed the wombat being driven to his hole by dogs, after which a fire was lighted inside and the mouth of the burrow closed with stones and earth. The animal was suffocated and dug out at leisure. The koala was also eaten, and would be a comparatively easy prey to the spear or throwing-stick. Bandicoots were dug out in a similar manner to the wombat, as also were the platypus, echidna, and many other burrowing nocturnal animals.

Buckley also states that occasionally the grass or scrub was fired to render the capture of the food animals easier. The question whether the aborigines did so use fire has been a controversial one, but the evidence in favour of their doing so seems to be sufficient. Doubtless, however, they used fire only when conditions for doing so were favourable and not likely to devastate their hunting-grounds.

Next to mammals, fish were the most important source of animal food to the Australian aborigines. In fact, in many coastal, river and lake areas it was the most important and the principal item of their cuisine. Many were the ways of obtaining them and the methods in the different districts were widely diverse. As might be expected, the most highly developed methods were found where water was permanent and fish plentiful. Spearing for fresh-water fish in lagoons and waterholes and for sea-fish in rock pools was general, though the spears themselves differed.

Fish spearing was also conducted at night with the aid of flares, in a manner similar to that of our present-day flounder fishermen. The narcotising of waterholes by pituri was, and probably still is, common in the north. Fish-hooks of various kinds were made from eagle talons, shells ground down, and composite hooks made from bones and joined by resin. Lines were made from bulrush, tea-tree, and other fibres, or in some districts from the fur of possums, or even human hair. The vegetable fibres were extracted by being masticated by the women. It was then spun by the well-known process of rubbing on the thigh by the men in a similar manner to the hair string which enters so much into aboriginal economy.

The netting of fish was much practised, the nets being made from the twines referred to above. They were beautifully made and their knots were precisely similar to that used to-day all over the world. On the Diamantina, they were made up to 20 feet in length, and were used like our present seine nets. In South Australia they were usually bag nets with a smaller mesh at one end. Nearly all our existing types of nets were represented in some district or other, though it is curious to note that usually they used neither float nor sinker. Sturt, however, records having seen both used on the Darling.

In the Western District of Victoria the natives were seen to catch fish in shallow pools by the naked hand in a manner similar to the "tickling" of trout. Eyre says that he saw aborigines dive into river pools without net or implement and bring up good-sized fish, which they caught with their hands at the bottom. Elaborate fish-traps and weirs were noted all over Australia. Some of these are of stone and are as large as from 80 to 100 yards in width and extending over 100 yards in length, over the river course, and so solidly built that they have survived many floods down to the present day. Others were interwoven nettings of reeds of very neat workmanship. Others again were merely temporary structures of brushwood; or a living weir made by a party of women carrying reeds and gradually converging to a centre.

(To be concluded.)

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EXCURSIONS

SATURDAY, OCTOBER 12.—Footscray Gardens. Subject: Cultivated Australian Native Plants. Leader: Mr. W. H. Nicholls. Travel by train from Flinders Street at 2.0 or 2.15 p.m. (Williamstown line). Later trains at 2.27 and 2.45 p.m.; also 2.42 p.m. (for St. Albans). Fare, second return, 7d.

SATURDAY, OCTOBER 19.—Lilydale. Subject: Geology. Leaders: Messrs. F. S. Colliver and A. C. Frostick. Travel by Healesville train from Princes Bridge at 1.35 p.m. Fare, second return, 2/5.

SATURDAY, OCTOBER 26.—Black Rock. Subject: Pygmy Plants. Leader: Mr. A. J. Swaby. Train from Flinders Street at 2.3 and 2.20 p.m., thence by electric tram, alighting at Cheltenham Road. Train fare, second return, 1/6. Tram fare, 3d. each way.

TUESDAY, NOVEMBER 5 (Cup Day).—Fern Tree Gully. Club Picnic. Leader: Mr. L. W. Cooper. Train from Flinders Street at 9.18 a.m. (running express from Richmond to Box Hill). Fare, second return, 2/5.

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Vol. LVII, No. 7



NOVEMBER, 1940

THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, NOVEMBER 11, 1940

1. Minutes.
2. Subject for the Evening: "Locomotion in Mammals," by Mr. C. W. Brazenor (Mammalogist, National Museum, Melbourne).
Illustrated by the Epidiascope.

3. Correspondence and Reports.

4. Election of Members.

AS ORDINARY MEMBER.	PROPOSER.	SECONDER.
Mr. R. W. Armitage, 33 Norwood Road, North Caulfield, S.E.7.	Mr. L. W. Cooper.	Mr. F. S. Colliver.
AS COUNTRY MEMBERS.		
Miss Marjorie Govan, Caledonian Hotel, Wonthaggi.	Mr. C. F. Lewis.	Mr. L. W. Cooper.
Mr. R. H. Goddard, 54a Pitt Street, Sydney, N.S.W.	Mr. S. R. Mitchell.	Mr. L. W. Cooper.

5. Nominations for Membership.

6. General Business.

- (a) Forthcoming Excursions.
- (b) Questions by Members.

7. Nature Notes.

8. Remarks by Exhibitors.

9. Conversazione.

The Victorian Naturalist

Vol. LVII.—No. 7 November, 6, 1940

No. 683

PROCEEDINGS

The usual monthly meeting of the Field Naturalists' Club did not take place in October. Instead, the date was given over to an Exhibition of Garden-grown Native Plants. A report of this function follows.

EXHIBITION OF NATIVE PLANTS

Although the weather and certain other circumstances were unfavourable, a very successful exhibition of Australian plants was held under the auspices of the F.N.C. in the Victorian Horticultural Society's Hall, on October 14. This display, which was confined to garden-grown plants, took the place of the Wild Flower Show and general Natural History Exhibition which the Club usually conducts each year.

The President of the F.N.C., Mr. L. W. Cooper, in opening the show, congratulated the various exhibitors on the general excellence of the display, which indicated, he said, the remarkable manner in which Australian plants had grown in favour with gardeners in recent years. He hoped that the cult would continue and that members would continue to urge the protection of native flora in its wild state.

Mr. Cooper thanked all members who had responded to the call for exhibits. He mentioned also the help given by the Director of the Melbourne Botanic Gardens (Mr. F. J. Rae), the Curator of Footscray Park Gardens (Mr. D. Matthews), the Superintendent of Burnley Gardens (Mr. A. Jessop), the trustees of Maranoa Gardens (through Mr. F. Chapman), the Victorian Horticultural Society, and the Victorian Forests Commission, this last body assisting with motion pictures and lantern slides.

During the course of the exhibition lecturettes were given by Mr. I. C. Hammet and Mr. H. T. Reeves. Owing to the interest shown by the public, the lecture room was overcrowded at each session.

The appeal of the display generally was well illustrated by an American visitor, who was so pleased with what he saw in the afternoon that he returned in the evening with a number of friends.

No charge was made for admittance to the Exhibition, but a collection was taken up for the Australian Comforts Fund; this

realized £4/9/5. A further sum of 18/6 was gained from the sale of flowers.

This appears to have been Australia's first general Exhibition of garden-grown native flowers, and the Club has reason to congratulate itself on having shown approximately 400 species of plants.

Among the many members who rendered sound service, special mention should be made of the work of the President. Mrs. Cooper was presented with a basket of beautiful wild flowers by the lady helpers.

H. P. DICKINS.

HAND-COLOURS FLOWER PHOTOGRAPHS

The beauty and the fantasy of Australian wild flowers are strongly manifest in an exhibition of hand-coloured photographs at the Kodak Galleries, 252 Collins Street, Melbourne. The pictures are the work of Mr. H. T. Reeves (a member of the F.N.C.) assisted by Miss Irma Hamet, Mr. F. Bishop, and Mr. W. H. Nicholls.

Every one of the photographs is a beautiful study. Mr. Reeves's camera work is always distinguished by good taste and sound judgment, and, what is no less important, the colouring has been done artistically and with proper botanical appreciation. Practically all of the various States are represented, but most of the plants depicted are Victorians—those which we see on rambles in various parts of the State. Nearly 200 species are illustrated, many of them *in situ*.

The show was opened by Mr. E. E. Pescott on October 24. It will continue until November 14. There is no charge for admittance.

EXCURSION TO RINGWOOD AND MITCHAM

This excursion took place on Saturday afternoon, September 21. Twenty-eight members and friends took part in the excursion. A start was made for some good collecting ground at the back of Luffmann's Hill. Thirty species of plants, including ten species of orchids, were collected. Nice specimens of the Brown-beak Orchid (*Lyperanthus suaveolens*), the dark and light-coloured varieties, were collected. Unfortunately, many species of orchids, once common in the Ringwood district, are fast disappearing owing to the land being taken up for orchard and building purposes. Introduced weeds are also responsible for the disappearance of many kinds of orchids in Victoria.

Insects were scarce, only a few of the interesting gall-making scale-insects being collected.

C. FRENCH.

NEW LYRE-BIRD PHOTOGRAPHS

Because there is never any flagging of interest in Australia's wonderful Lyre-bird, a warm welcome is likely to be accorded a booklet containing nine new photographs taken in Sherbrooke Forest by Mr. A. G. Campbell. Most of the pictures show the male bird in various stages of display. All of them are attractive and some are very distinctive. Mr. Campbell is to be congratulated on the production of the booklet, which should make an excellent seasonal gift. The price is 2/6.

THE ROMANCE OF KIPLING'S DITTANY

By EDITH COLEMAN, Blackburn, Victoria

Excellent herbs had our fathers of old—
Excellent herbs to ease their pain—
Alexanders and Marigold,
Eyebright, Orris, and Elecampane,
Basil, Rocket, Valerian, Rue,
(Almost singing themselves they run)
Vervain, Dittany, Call-me-to-you
Cowslip, Melilot, Rose of the Sun.
Anything green that grew out of the mould
Was an excellent herb to our fathers of old.

—KIPLING ("Rewards and Fairies").

No section of botany is more fascinating than that which deals with the history of old herbs and their reputed medicinal virtues. How closely, too, they are bound up with the early history of every people! Their known uses date back to remote antiquity—to writings on Ancient Egyptian papyri about 1600 B.C.; to Hippocrates (466 B.C.); to Theophrastus, successor to Aristotle (about 370 B.C.) who described some 500 herbs, assigning to each one such virtues as were then known; to the gossipy writings of Pliny in the first century, although these were little more than reports of the tenets of earlier writers.

Searching the old herbals, more or less learned, but always charming, one finds that they have an important bearing on the history of primitive peoples; that, indeed, they hold up a mirror to the ways of our far-back ancestors. They tell of strange customs connected with the gathering and use of herbs—either to propitiate evil spirits or for healing, identical customs practised by primitive peoples in widely separated countries, long before travel facilities could have brought them in contact.

These old herbals were written with such artless simplicity that we may accept them as read. No subtleties underlie word or phrase. Because of this transparency there are no books that shed a clearer light on the customs and beliefs of our forefathers, on the development of new ways of life.

Many of them, it is true, are no more than a sequence of unverified reports handed down by tradition, their chief sources being Dioscorides and Pliny. There are no useful botanical descriptions, or classification, until we come to the herbals of Brunfels (1530) and Fuchs (1542), when the wide use of herbs had created a need for accurate (safe) recognition.

And so through many ages the familiar names of herbs have wound their way, a silver thread in historic tapestry.

It is their romantic and traditional aspect, rather than their alleged virtues, that make it so pleasant to-day to grow the herbs of our ancestors. Not only do they speak of green ways and lush meadows of the motherland, but they are a part of our literature.

They recall some of our best-loved writers in whose work-a-day lives they held an important place: Bacon, Evelyn, Ben Jonson, Burton, Izaak Walton, George Herbert, and John Wesley—to cite but a few of their names.

They are plants whose names have been sung by poets in all ages, from the ancients to Chaucer in the 14th century, to Spencer, Drayton and Shakespeare, in the 16th, Milton and Dryden, in the 17th, Cowper, Claire and Keats, in the 18th, to Tennyson, Swinburne, Bridges and Kipling, in the 19th.

By Kipling's day, so complete had become the trend away from simple things, that the knowledge, and even the names, of many herbs were little more than a memory. More flaunting flowers had taken the place of quiet, fragrant herbs that Shenstone's schoolmistress knew so well, or such as Claire loved and laments:

*"Flowers in my time which everyone would praise,
Though thrown like weeds from gardens nowadays."*

Except in a few old cottage gardens, or the gardens of botanists and lovers of literature, these plants of long tradition are now rarely seen. Desirable as they are, it is easier to gather a representative collection of orchids, lilies or irises than of the poets' herbs.

Although Kipling's stories and poems contain references to other excellent herbs, it is the garland of 15, linked with his story of the old astrologer-physician, Culpeper ("Rewards and Fairies") that are most readily recalled. All of them are easily obtainable, even to-day, except Dittany.

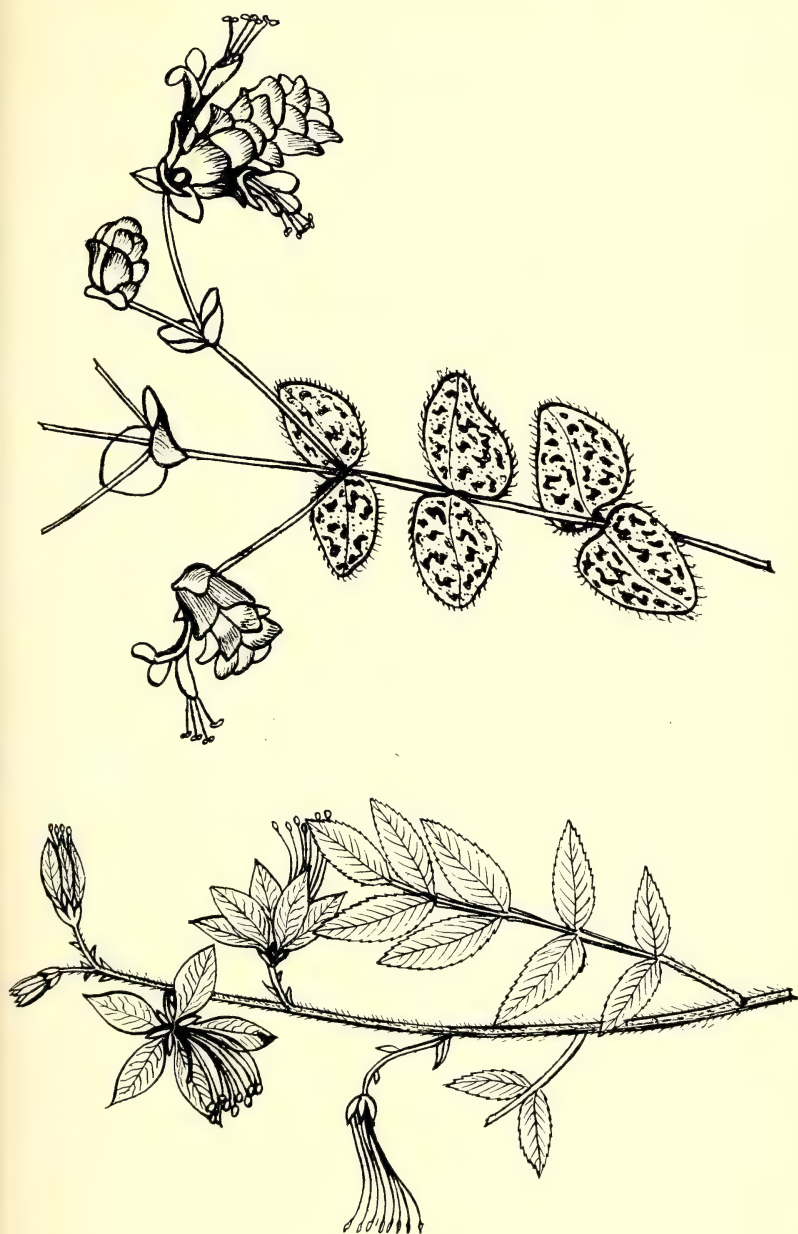
In tracing the history of this historic herb one learns that, by the time Kipling's poem appeared, it had become exceedingly rare, if not extinct, in England.

Although in his youth, Kipling may have seen Dittany growing in cottage windows, it is more probable that the name was suggested by a perusal of old herbals in which he was known to delight; or else that he refers to the fragrant False Dittany (*Fraxinella alba*) of no healing virtue, as far as I can learn.

Confusion still exists concerning Dittany, the sacred healing herb of Crete, which was said to enable the wild goats of Mount Ida to eject poisoned arrows, and which eased the pain of those who wreathed it about an image of the goddess Diktynna, the native Artemis. A wild form of *Lepidium*, which, because of its pungency, was used in days when pepper was a costly condiment, was known to many old writers as Dittany. Lyte (1578) disagrees with them: "This herbe is fondly and unlearnedly, called in English, Dittany. It were better, in following the Dutchman, to name it Pepperwort."

The plant which has most consistently masqueraded as Dittany is the white *Fraxinella*. Linnaeus, wrongly identifying this with

PLATE XIV



Left: *Dictamnus albus* Linn. (Syn. *D. fraxinella* Pers.) "Fraxinella" or "False Dittany." From *Icones Florae Germanicae* Reichenbach (1841). Right: *Origanum dictamnus* Linn. "Dittany of Crete." From a coloured illustration by W. Curtis in *Botanical Magazine* (1795).

the *Dichtamnus* of Dioscorides, described it as *Dictamnus fraxinella*, and the rules of botanical nomenclature demand the retention of this name, while the true Dittany of Crete, also described by Linnaeus, must be known as a Marjoram (*Origanum dictamnus*).

The wild Dittany, gathered by Venus on Mount Ida, which Iapis applied to the wounds of Æneas, was "smooth of leaf and purple of bloom." Sir Arthur Evans (*Palace of Minos*, 1936) makes this quite clear. Crete had been famous as a hunting-ground for botanists since the days when it furnished imperial Rome with drugs. Sir Arthur Evans verified many historical elements in Cretan legends. The *Palace of Minos*, a comparative account of early Cretan civilization, "furnishes the European culture of to-day with title-deeds going back to the fourth millennium B.C."!

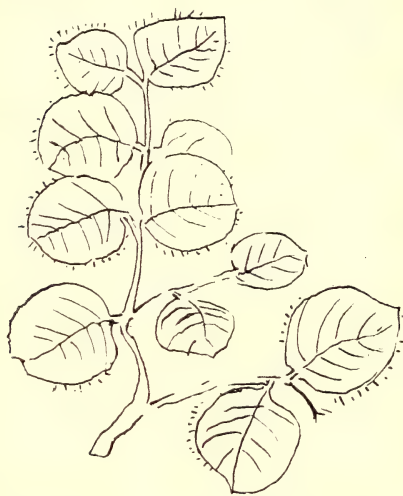
In 1898 Sir Arthur gathered, in the almost inaccessible crevices of rock above the votive cave Stravomyti, tufts of the true Cretan Dittany, with roundish leaves, lilac-veined, and covered with soft hair. Although not in flower, a sketch made by him at the time (a tracing of which is shown on page 130) identifies it with Virgil's plant.

The palace at Knossos, founded about 2,000 B.C., owing to its immemorial sanctity, had never been encroached upon by the Greek and Roman settlements that hemmed it in. During the excavations, which commenced in 1900, one wing two storeys high was found buried beneath its own third and fourth storeys, within an apparently natural hillside.

Fresco paintings on the ruins showed the true fresco process in which the Minoan colours—black, red, white, yellow, and two blues—had obviously been applied while the stucco was still moist, and were so completely incorporated that the buried pictures had resisted the action of the soil for 3,500 years, and the action of the sun after they were disinterred! On the ideal surface of these frescoes the Minoans drew with the rapidity and confidence that the true fresco process demands. They confined themselves to outlines, and washes of flat colours without shading.

For centuries, primitive man, who drew animals so realistically, either ignored plants because they were, as yet, of less value to him, or drew them merely as conventional patterns. Early-Minoan, conventional plant drawings were later replaced by recognizable forms. On one fresco (the Partridge frieze) a hoopoe, with crest erect, is perched on a curious round-leaved spray of what Sir Arthur suggests represents the true Dittany, thus carrying its history back to about 2,000 B.C. and affording proof that the Minoans regarded the plant as sacred—all of which makes the transfer of the name *dictamnus* to *Fraxinella* more inexplicable.

Sir Arthur, with the assistance of Dr. A. B. Rendle, traced the origin of "this curious misappropriation of an historic plant name" to Caspar Bauhin. Bauhin, in his *Theatri Botanica* (1523), after duly mentioning *Dictamnus creticus*, adds at the bottom of a column: *Dictamnus albus—vulgo sive Fraxinella* (commonly called Fraxinella). This points to a popular misnomer of early currency, since Fraxinella was well known in dialects of Continental Greece.



Tracing from Sir Arthur Evans's sketch in *The Palace of Minos* of a sprig of the true Dittany gathered by himself in a crevice of rock above the votive cave Stravomyti (Crete).

Codex of Dioscorides represents another plant, supposed to be a kind of Calamint, or Wild Basil.

Sir Arthur also comments: "In Sir A. Hort's translation of *Theophrastus* (1916) a curious confusion occurs. *Origanum dictamnus* is described as the true Dittany, *with which the Cretan Dittany has nothing in common.*"

I do not agree with Sir Arthur on this point. The translation, as I read it (*Enquiry into Plants*, vol. II, p. 295) covers three plants: (i) Dittany, (ii) False Dittany, and (iii) another plant called Dittany "though it has nothing in common with these except the name."

The illustration, Plate XIV, is from Curtis (*Bot. Mag.*, IX, 1795) which, according to Sir Arthur Evans, gives a correct view of the Cretan plant. There is little doubt that the foregoing represents the history of the true Dittany of Crete.

Linnaeus, who described both genera, *Dictamnus* and *Origanum*, in his *Systema Naturae* (1735) seems to have preferred this footnote entry of Bauhin, and so identified his *Fraxinella* with the *Dichtamnus* of Dioscorides, and other Greek writers, to which it bears no resemblance. Consequently, Fraxinella has flourished since, by full right of scientific nomenclature, as *Dictamnus* generically, while the true Dittany continues as a species of *Origanum*.

Sir Arthur adds: "It is discreditable to botanists that a herb of such literary celebrity and so well described by ancient authors should be thus supplanted." To add to this history of mystification, the early drawing of the illustrated

According to Curtis (1795) Dittany had long been known in England as a medicinal plant, and still continued to be used "as imported in the dried state from the Levant." Turner (1568) writes that he had seen it "growynge in Maister Riches' gardin naturally and nowhere elles that I know of saving only in Candy." Thus, as Curtis states, it must have been growing in the open, for at that date the greenhouse had not been introduced.

Other authors refer to Dittany in a matter-of-fact way, as if, in their day, it were no uncommon plant.

Johnson (1856), in addition to Dittany of Crete, records Dittany of Amorgos (*D. Tournefortii*), presumably named in honour of Tournefort, a traveller in the Levant, who wrote of natural products as well as antiquities. Coming a little nearer to Kipling's day, Hogg (1858) and Robinson (1883) refer to Dittany of Crete as a window plant, and allude to its medicinal uses, although by this time it must have become rare. Ferney (1897) although familiar with Virgil's story, seems to confuse it with Hind's-heal (a Germander) probably connecting the hinds with Virgil's wounded goats.

Farrer (1930), 5th ed., writes of Dittany as growing in all the shady rocks of Crete, and describes it, "one of the best of the Marjorams," as if he were quite familiar with it. E. S. Rohde (*My Garden*, Feb., 1934) says: "Dittany is curiously fascinating. The largest clumps I know are those in the gardens of St. John's College, Oxford. This plant figures largely in classical lore, and from time immemorial, witches have been credited with using it in their magic potions."

As Fraxinella grows in the St. John's gardens and the true Dittany does not, I think Miss Rohde must here allude to Fraxinella, although I have come upon no reference to it in classical authors as a witches' herb.

Mrs. Grieve (1931) states that the root of Fraxinella was once used in "scrofulous and scorbutic diseases" In *My Garden* (Nov., 1934) Miss Rohde describes Dittany of Crete "with downy foliage and pink flowers," and gives directions for taking cuttings.

In a letter to me (6/2/40) Miss Rohde, whose delightful books have sent many of us in search of herbs, writes: "I only wish I could get the true Dittany, and the Dittany of Crete is equally unobtainable," which again suggests confusion over the identity of this historic plant. From a careful perusal of all available descriptions I think there can be no doubt that true Dittany and Dittany of Crete are identical—as the *Origanum dictamnus* of Linnaeus.

In view of the complete disappearance of this plant from Sussex and Surrey gardens, I think it must be agreed that Kipling's herb is the False Dittany or White Fraxinella, which, owing to a botanical lapse, must continue to be known as *Dictamnus*

fraxinella. Fraxinella, much praised by many authors for its citron-like odour, was introduced into England from South Europe at the end of the 16th century. According to McDonald (1895) an inflammable vapour mentioned by many authors, which is emitted after dark by Fraxinella, was discovered by the daughter of Linnaeus. Lovers of Kipling do not find it an easy plant to establish, but it is worth the trouble involved.

But the story does not end there. The *American Herbarist* (1936) reported a plant of the sacred healing herb, brought to Boston from the hills of Crete, by Mrs. Ellery Sedgwick. Its description exactly fits specimens of true Dittany in the Gray Herbarium, Harvard. Thus America has now a chance to restore to our gardens, as well as its own, the lost Dittany of Crete.

It will be noted that authors have variously translated the colour of Virgil's Dittany. Giles (*Key*) construing literally word for word, renders it "red." Dryden, whose translation makes delightful and easy reading (probably because he does not adhere too strictly to the text) makes the flower purple, a matter of little importance really. Classical scholars have made it clear that ancient Greeks and Romans, and probably all nations in the early stage of their existence, had a very limited perception, and very loosely applied nomenclature, of colour; that *purpureus* in Latin meant almost any bright colour. Its application was so wide that it was used to designate the colour of blood, of the poppy, a white swan or a woman's white arms. This undeveloped colour-sense is noted in the Old Testament, and in Shakespeare.

Incidentally, Shakespeare's "And buds of Marjoram had stol'n thy hair" (Sonnet xcix) suggests the silky buds of the rarest of all the Marjorams, Dittany. Miss Rohde (1934) notes that this line has never been satisfactorily explained. On this point Canon Ellacombe (1896), one of the keenest and most botanical of gardeners, says: "The comparison of a man's hair to the buds of Marjoram is not very intelligible; but it was probably a way of saying that the hair was golden." I think it is one more instance of Shakespeare's intimate, rather than botanical, knowledge of English flowers, and his clever use of them in making us visualize what he wishes us to see. While Ellacombe was doubtless familiar with the soft, golden pubescence on unopened buds in species of Marjoram he did not fully grasp the comparison.

ACKNOWLEDGEMENTS

I am greatly indebted to Mr. J. H. Willis, of the National Herbarium, for the drawings from Curtis and Reichenbach. That of Dittany of Crete is especially valuable in view of the fact that Sir Arthur Evans has stated that it represents the true Dittany of Crete, described by ancient authors. Mr. Willis kindly supplied several notes from authorities I have not been able to consult. I am also indebted to Miss Cruickshank for the loan of back numbers of *My Garden*, and to Mr. F. C. W. Champ, who supplied the record from Farrer. In the illustration by Curtis the hop-like stroboli are of a delicate green, flushed with purplish-pink. The flowers are pink with protruding stamens. The leaves are mottled.

BREEDING THE SATIN BOWER-BIRD IN CAPTIVITY

By ARNOLD HIRST, Sydney*

It occurred to me that naturalists may be interested in observations on the keeping and breeding of the Satin Bower-Bird (*Ptilonorhynchus violaceus*), a species of our avi-fauna that, so far as I have been able to learn, has not hitherto been bred and reared in captivity.

In my breeding pair, which I have had for the past six or seven years, I was fortunate, perhaps, in having secured a pair which I fancy were mated when caught; but, being fully matured—the male, in particular, was a fine specimen in full adult plumage—they were perhaps slower in adapting themselves to captivity than would have been the case had they been younger birds or ones that had previously been kept in confinement.

However, in course of time they settled down, and when, in 1937, I was able to provide them with conditions resembling as nearly as possible their natural state, their contentment was at once apparent. In December of that year they built their nest. In the selection of a site, advantage was taken of the privacy which a dense clump of tea-tree, dead and suspended from the roof of an open shelter, provided. The nest corresponded with the usual design, cup-shaped and composed of thin sticks and twigs and loosely lined with dead leaves.

On this occasion one egg only was laid, although two to three are the usual number; but, being mainly interested in the problems of breeding and rearing, my chief concern—once having satisfied my curiosity as to the content of the nest—has been to see that the birds enjoy absolute freedom from interference. For this reason I regret that I have nothing to add to the knowledge of the domestic habits of the species—not even with certainty the period of incubation.

The section of the aviary to which I refer has an area of 133 square yards and a height over all of from seven to eight feet. On the western side of the flight, and protecting it from the winds that occasionally blow here in all seasons of the year from that quarter, is a dividing fence, along which the neighbours have conveniently planted a tall privet hedge. Within the aviary is an assortment of shrubs, with a few conifers interspersed. A fig tree is there also, and an old pittosporum, which has been lopped, spreads its branches to give further shade and protection to the birds.

*Mr. Hirst, a Sydney business man, has achieved the distinction of breeding both the Satin Bower-bird and Whip-bird in his aviaries, both cases being unique. It is interesting to note that a pair of Satin Bower-birds are nesting in an enclosure at the Healesville Sanctuary at time of writing; a strong hope is held that young birds will be hatched and reared.—Editor.

Under such conditions the birds have all the privacy necessary, and the fact that they have regularly nested for the past four years supports my belief that, given a setting resembling the natural habitat, it is possible to breed almost any bird in captivity.

By the use of the word "breed" I mean only what the word implies. To *rear* the progeny is another matter. Indeed, I have yet to learn the secret of my one and only success in doing so with a young Bower-bird. Possibly it was due to the fact that on the occasion in question the birds had only one egg and one chick to care for. It would appear, then, to have been a matter of quantity rather than the quality and kind of live food that happened to be available. Otherwise, only sheer good luck would account for an achievement that I have not since been able to repeat. The birds, however, have nested regularly every year since, laying two eggs and hatching both, but failing to rear the babies beyond the second or third week.

Unfortunately, about the month of November the meal-worms, which if available in unlimited quantities would perhaps be sufficient to bring the youngsters to maturity, begin to turn into beetles. In consequence, by December and January, when the eggs are hatched and live food is most needed, I am forced on to substitutes which are difficult to find in sufficient quantities.

If the nestlings survive the first four or five weeks the problem of feeding becomes easier. Then, I found, well sweetened bread and milk was readily accepted; but it is necessary to have it lumpy enough for the parent bird to carry. A supply of fruit, chiefly bananas, and a good soft-bill food are always available; but although these are greatly appreciated by the adult birds I am unable to say if either was ever fed to the nestling; however, I fancy not. In adult life the Satin Bower-bird is one of the easiest birds to cater for as it is practically omnivorous.

I cannot say whether the brooding is shared by both birds or done by the female alone; but it may be taken as a fact that, with this exception, every function having to do with the life and welfare of the brood is borne by the female. The handsome male bird, judging by his habits in captivity, appears to have only one interest in life—that is the upkeep of his beloved bower. From it he is never long absent. To him and to a lesser degree the female, there is nothing so sacrosanct; in it their constructive and artistic genius finds expression; it is at once their temple, their trysting-place and their playground.

I have been curious to discover what the birds' reactions would be to conditions which afforded them little opportunity for free choice of material in the building of their bowers; but, such is the ingenuity of the birds that on occasions when I have purposely withheld supplies of material from them they succeeded in constructing their bowers as well as ever from sticks that they had

themselves plucked from the shrubs in the aviary. I have noticed, moreover, that their interest and pride in the bowers were not affected to any extent by lack of ornaments with which to adorn them.

It would also appear, from experiments which I have made, that the "painting" of their bowers (a practice which is to be frequently observed in the field) is not essential to either their economy or enjoyment. It is, of course, probable that I did not provide them with the requisite material for the work, but, as I have supplied them with charcoal, which is said to be the medium used, the fact that they have never shown any disposition to paint their bowers suggests that this manifestation of their genius is only exhibited when conditions favour it or render it desirable.

One peculiarity in the construction of the bowers, the reason for which is as obscure as it is remarkable, is the aspect in which they are built. Invariably I have found the walls run in a north and south direction. On two occasions I have lifted the bowers, platform and all—so strongly are they built that it is possible to do this without risk of damage—and transferred them to sites which seemed to me to be suitable in every way, excepting that in one instance the structure was given a slightly different bearing. The result of this experiment was that the bower did not survive the first inspection but was at once demolished and rebuilt, not on its former site but nearby, and in the usual northerly direction. In the case of the other bower, which was given the proper aspect, I noticed that the birds continued to use it for a few days; but it was evidently not to their liking and in due course met with the same fate as the other.

I have also noticed, contrary to the experience of some observers, that both birds share in the construction and maintenance of the bowers. There is no doubt that the male is largely responsible for the work, but I have frequently observed both birds, separately and together, making adjustments and whatever repairs that were necessary. Apparently, however, the birds object to the intrusion of others upon the bower. I fancy I have noticed at times a disposition on the part of the male to allow the young bird to approach the ground, but it is at once driven off by the female should she happen to be near. This point may be of some value in determining the sex of the youngster, which, although the bird is in its fourth year, is still a matter of doubt to me.

It is generally believed that the male Satin Bower-bird does not come into full adult plumage until the seventh year; but it is difficult to understand how the proof could be established without the actual breeding of the bird in captivity. If for no other reason, therefore, than to remove all doubt on the subject, I hope that the means of so doing may be open to me. Unfortunately, however, the indications do not point to my young bird being a male.

ANIMAL FOOD OF THE ABORIGINES

By G. N. HYAM, Melbourne

(Continued from last issue)

A whole paper could be written on the methods used by the aborigines in catching birds, but here a few examples must suffice.

Emus were hunted like kangaroo, except that the hunter carried a bough as camouflage. Like the fish, too, these and other birds were narcotised by pituri in water-holes. The Bustard or Plain Turkey was taken by an ingenious device by the Western District blacks. They made a similar decoy to that noted in connection with the luring of wallaby; also on the end of a long flexible rod. This was usually in the form of a small bird or even a butterfly. Suspended from it was a running noose. When the hunter saw a turkey, he slowly approached the bird, holding in front of him a bush to hide himself, and swinging the decoy. The turkey's attention was taken up with the movements of the decoy. He continued to stare until the black got near enough to slip the noose over his head.

Waterfowl were caught by an aborigine swimming under water with a reed in his mouth protruding above the surface to provide him with air, the birds being seized by the feet. The black hunter was also known to wade out to a flock of duck, very slowly and quietly, with his head enveloped in a "hide" of reeds until he got within range. Pelicans were lured by the aborigine gently throwing shells in the water from a "hide" to simulate the "raising" of fish, and were thus brought into range.

On the Tully, in Queensland, the natives are said to have used a kind of birdlime, but there are no details as to what this was composed of. Nets were also used in the capture of birds, and various forms of noose, operated from ambush. It would appear, however, that the boomerang and the throwing stick were the main means of securing birds for food.

Other examples may be given of items of aboriginal food, the capture of which was largely a matter of tracking and observation of the prey's habits. Shellfish were collected in likely positions; turtles—fresh-water and from the sea—were caught with the hand; lizards, snakes and frogs were all eaten, and were easily caught by those acquainted with their habitat.

The larvae or grubs of insects were collected from the interstices of bark, or under logs or rotten wood. The hives of wild bees were traced by capturing a bee and affixing a small piece of white down to it with gum and then releasing it. The keen-eyed aborigine would keep it in view on its flight to the hive in some hollow tree, and would quickly climb up and secure the honey.

The two most important insect foods were probably the witchetty grub of the Central Australians and the Bogong moth of the south-eastern tribes. The importance of the former is exemplified by its frequent appearance as a totem and in corroboree ceremonies. The Bogong moth was eaten in its adult stage. It was collected by lighting smudge fires under the the rocks under which the moths swarmed at certain seasons well known to the blacks. This smoking, and the oily nature of the bodies of the moth acted as a preservative, and after the wings were singed the bodies were winnowed and eaten immediately or else pounded and made into cakes. These cakes were used as portable food.

Other insect foods were the pupae of ants, particularly those of the "bull-dog" species, and many (perhaps all) insect larvae or pupae. These were often eaten raw, but, more commonly, they were roasted for a short time on ashes.

There is at least one instance of the aborigine levying on an animal for water in times of scarcity, paralleling his use of certain trees for the same purpose. In the animal instance it is a frog, which, like the water-storing plants, makes provision for carrying itself over a dry period. This frog occurs in Central Australia, and Baldwin Spencer describes how it is found by the blacks. He says: "He took me to a small claypan where the ground was fissured with deep cracks. . . . It looked about the most unlikely spot for frogs, because there was not a drop of surface water or anything moist for miles. The boy started to search about on the margin of the claypan, and in a minute or two pointed out some very indistinct marks on the hard clay, which, he said, had been made by a frog. . . . The ground was as hard as a rock and we had to cut it away with a hatchet; but, sure enough, about a foot below the surface, we came upon a little spherical chamber about $2\frac{1}{2}$ inches in diameter, in which lay a dirty, yellow frog. Its body was puffed out into the shape of an orange. . . . On squeezing the body, two or three teaspoonsful of perfectly clear, pure and fresh water were exuded."

It is a curious fact that this species of frog (*Cheiroleptes platycephalus*) is known to be widely spread in Queensland, New South Wales, and Western Australia, but it is only in the dry interior that it develops the water-storing habit.

It would seem, from a study of aboriginal hunting technique—the wide diversity of methods used and the ingenious tactics employed, as compared with the somewhat stereotyped practices of other primitive races—that here is additional evidence of the high intelligence of the blackfellow. There are no hard and fast methods of attack and capture. Indeed, the records point to the ability of the individual hunter speedily to evolve a tactical scheme of hunting a given animal or animals to meet special circumstances.

As far as the culinary arts were concerned, cooking was simple but effective. On the "walkabout" little time was spent in cooking, the meats being merely toasted or grilled. In the more permanent camps, ovens were carefully constructed. They consisted of stones previously heated in wood fires, placed in holes in the ground, and covered with damp grass or rushes. On this the animal was placed, usually whole. More grass was placed on top and the entrance of the hole was blocked with earth and stones.

It was customary to remove the entrails after the animal had been heated, and the cavity thus formed was carefully closed up again to catch the liquids. Meanwhile, the choicer parts of the viscera were roasted or toasted and eaten as a sort of appetiser whilst the main item of the menu was being cooked.

The smaller birds, and animals such as the echidna, were encased in clay and baked in the ashes like damper—a method that is still in use all over the world, particularly amongst the gypsies. On removal from the ashes, the baked mud flakes off, and with it the skin or feathers.

Fish were wrapped up in bark, tightly tied into a parcel or bundle and likewise buried in hot ashes. This seems to be the forerunner of the one-time craze for paperbag cookery. Whatever the aborigines' methods were in the different parts of Australia, early observers (many of whom, either from necessity or choice, had eaten much blackfellow food) are unanimous in praising the primitive cooks. Some also emphasise the fact that, although the aboriginal table manners left much to be desired, they were quite particular in the preparation and the cooking of their food.

This brings us to a consideration of other aboriginal etiquette in relation to food, i.e., the question of food taboo. It has been noted in the previous paper that this did not exist in relation to vegetable food, with the possible exception that close seasons for certain foods were proclaimed. A detailed description of these bans is more appropriate to a paper on taboos in general, so mention will be made here of only a few illustrative examples. A man may not eat of the animal that is his totem; others are confined to the medicine-men of the tribes. In Gippsland the uninitiated were not allowed to eat animals of the feminine gender. In Port Lincoln (South Australia) the general principle was that the men ate the male animals, the women the female, and the children the small animals. Throughout Australia the choicest portions were reserved to the "old men" of the tribe. As with all taboos, there is a wealth of interest in the tracing of their evolution. Some had a logical and useful purpose; others, like the reservation of the "bonne bouches" or tit-bits for the "old men," probably being a mild form of "racket," or "graft," by these crafty old fellows. Suffice it to say then that these taboos were very real to the aborigine, who was

taught and believed that many dire calamities would automatically fall upon the eater of tabooed food. It is well established that cannibalism, in some form or other, was known and practised amongst the blacks throughout Australia; but its practice was sporadic, and of a ritual nature rather than for purposes of food. In the main, the object was to absorb the qualities of the victim. More often portions of the bodies of enemies, or even tribal brothers, were eaten with this end in view, and the part mostly used was the kidney and kidney fat, the assumption being that this was the seat of the virtues of the deceased.

Finally, it is necessary to refer to the by-products of the chase for animal food. The skins of animals were used as clothing, or rather rugs, in the south, or as waterbags in the dry area. Bones had many uses, ranging from the "pointing bone" to awls, fish-hooks, and the like. Fur and hair were used in the manufacture of twine, string and nets; also for personal decoration. Teeth were used in weapons, tools and decoration. Feathers and down of birds were required extensively in the performing of corroborees. Blood was used as a food when in a congealed state, and at times as a pigment. On the whole, very little of the animal escaped use for some purpose or another—like the Chicago meat-packers, the aborigines may be said to have used "everything but the squeak."

The conclusions that can be reached in the study of the aboriginal foods is that probably no race had a more diversified selection, and that—as was found in relation to their vegetable foods—all the elements for proper nutrition were present in their diet. From nowhere in Australia is there any record of any nutritional disease caused through the excessive use of one particular food, such as occurs in races that live exclusively on fish.

There remains one phenomenon which should not be overlooked, and that is the capacity for the absorption of enormous meals at one sitting. This is shared by hunting races all over the world, and has probably been acquired through occasional times of scarcity, so that the hunters have a tendency to feast while they may. Reliable observers have given almost incredible instances of gargantuan meals by aborigines. Conversely, it may be said that there are many records of the blackfellows' ability to exist and travel for long periods without food when occasion demanded.

(Concluded.)

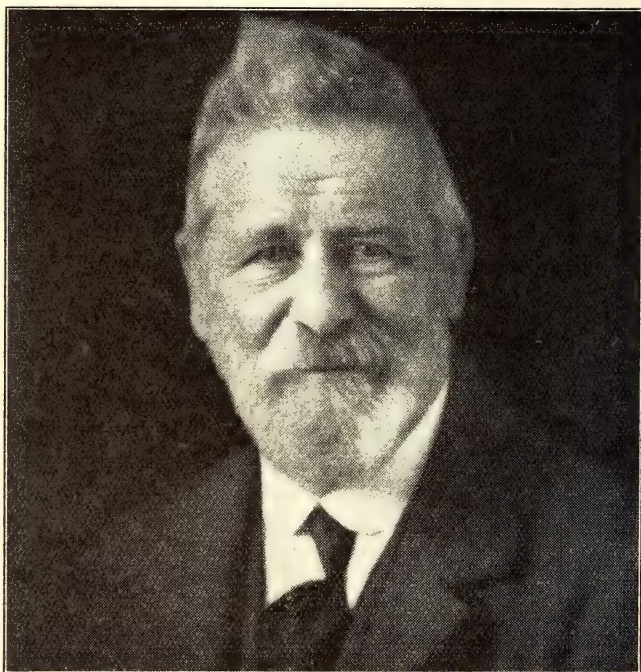
"WHY OUR ANIMALS ARE QUEER"

Under this title Mr. Crosbie Morrison (a member of the F.N.C.) will give an illustrated lecture in Nicholas Hall, adjoining Wesley Church, Lonsdale Street, Melbourne, on Wednesday, November 13, at 8 p.m. The price of admittance is 1/-, and proceeds are in aid of the Wesley branch of the Red Cross Society. Musical items will be contributed.

THE LATE WILLIAM M. BALE

The passing of William M. Bale, who died on October 4, at the age of 89, removed the last name of the 56 original members of the Field Naturalists' Club of Victoria. W. M. Bale joined with the founders of the Club, being elected as a member in May, 1880, over sixty years ago. The first published list of members was issued two and a half years after the Club was founded, and the name of W. M. Bale is on it.

William Bale was a microscopist, specializing in the study of Hydroids. In March, 1882, he read a paper before the Microscopical Society of Victoria, "On Recent Improvements in Microscopy." This was published in the *Southern Science Record*, then the official organ of the Field Naturalists' Club.



In 1882 he was elected Secretary of the Microscopical Society of Victoria, and read a paper on "Micrometers." In 1885 he published what was probably the first list, a "Catalogue of the Australian Hydroid Zoophytes." In 1889, in volume V of *The Victorian Naturalist*, he issued a "List of Victorian Hydroida," which "includes all species hitherto recorded from the coast of Victoria and from the adjacent waters of Bass Strait." Many of Mr. Bale's specimens and relevant books were presented to the National Museum, and others are to go to the National Herbarium.

William Bale was of a retiring disposition, but he was always friendly and willing to help. He was not a frequent attendant at Club meetings, and in later years rarely went out at all. As an officer of the Customs Department he led a busy life, and he still kept up his bent of Natural History to the end.

He was unable to attend the Diamond Jubilee of the Club owing to infirmity, but his portrait was placed on the table as a reminder that we still had one of the original members with us.—E.E.P.

Field Naturalists' Club of Victoria

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EXCURSION

SATURDAY, NOVEMBER 16.—Kew Lagoons. Subject: Aquatic Life. Leader: Miss J. W. Raff, M.Sc., F.E.S. Take train to Kew, or tram in Collins or Flinders Streets to Kew Junction, thence North Kew bus, and alight at Grandview Terrace. Dip-nets and Mason jars should be taken; wading boots will be very useful. The leader will meet the party at Grandview Terrace at about 2.30 p.m.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

VICTORIAN SEA SHELLS, by C. J. Gabriel, describing 150 shells, all to be found in Port Phillip, is abundantly illustrated. Price, 1/6.

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£1/1/-, new.

IVENS: *Melanesians of the South East Solomon Islands*, 45/-, reduced to
13/6, new.

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LITTLEJOHNS: *The Lyrebird*, 4/6 at 2/6, new.

WOLLASTON: *Our Wattles*, 3/6, new.

SEDGWICK, SINCLAIR, AND SHARP: *Peripatus, Myriapods and
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MAIDEN: *The Flowering Plants and Ferns of N.S.W.*, 7 parts in 1 vol.,
1893, 30/-, secondhand.

PYCRAFT: *A History of Birds*, 1910, 30/-, secondhand.

MOORE & BETCHE: *Handbook of the Flora of N.S.W.*, 1893, £2/10/-,
secondhand.

KENT: *Veitch's Manual of the Coniferae*, 1900, £3/10/-, secondhand.

ROUGHLEY: *Fishes of Australia and Their Technology*, 1916, £1, second-
hand.

HOWARD: *A Water Hen's Worlds*, 1940, 7/6, new.

LUCIANI: *Human Physiology*, trans. by Welby, 5 vols., £9/15/- reduced
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DECEMBER, 1940



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, DECEMBER 9, 1940

1. Minutes.
2. Subject for the Evening: "Some Entomological Reminiscences," by
Mr. F. E. Wilson, F.E.S. Illustrated by the Epidiascope.
3. Correspondence and Reports.
4. Election of Members.

AS ORDINARY MEMBERS.	PROPOSER.	SECONDER.
Mrs. C. Ewart, Gipps Street, East Melbourne.	Mrs. J. J. Freame.	Mr. A. D. Hardy.
Miss C. M. Bourne, 28 Donne Street, W. Coburg.	Mr. L. W. Cooper.	Mr. F. S. Colliver.
Dr. D. Roseby, 339 Church Street, Richmond Hill.	Mr. L. W. Cooper.	Mr. F. S. Colliver.
AS ASSOCIATE MEMBER.		
Master R. B. Ewart, Gipps Street, East Melbourne.	Mrs. J. J. Freame.	Mr. A. D. Hardy.

5. Nominations for Membership.
6. General Business.
 - (a) Forthcoming Excursions.
 - (b) Questions by Members.
7. Nature Notes.
8. Remarks by Exhibitors.
9. Conversazione.

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December, 4, 1940

No. 684

PROCEEDINGS

The monthly meeting of the Club was held at the Club Rooms, Royal Society's Hall, on Monday, November 11, 1940. The President, Mr. L. W. Cooper, presided and about 80 members and friends attended.

OBITUARY

The President announced the deaths of Mr. W. M. Bale, the last of the Club's Foundation Members, and Mr. A. E. Keep, a member of many years' standing. Messrs. G. Coghill, A. H. Mattingley, P. C. Morrison and E. E. Pescott paid tribute to those members, and all present stood in silence as a token of respect.

SUBJECT FOR THE EVENING

An illustrated lecture was given by Mr. C. W. Brazenor, Mammalogist at the National Museum, Melbourne, on "Locomotion in Mammals." With the aid of a large series of lantern slides he traced the progress of the heel bones from the primitive mammals through to modern types. Specialized burrowing, flying, swimming, and climbing types were also dealt with.

The lecture was of outstanding interest and members fully appreciated it, as was shown by the number of questions asked and discussions raised. Mr. Brazenor was given a cordial vote of thanks.

CORRESPONDENCE

A letter from Mr. W. D. Weir, of Upwey, offering to collect butterflies for any interested members.

REPORTS OF EXCURSIONS

Reports of excursions were given as follows:—Maranoa Gardens, Mr. E. E. Pescott; Ringwood, Mr. C. French; Bayswater, Mr. L. W. Cooper; Lilydale, Mr. F. S. Colliver; Black Rock and Club Picnic to Upper Fern Tree Gully, Mr. L. W. Cooper.

ELECTION OF MEMBERS

The following were elected:—As Ordinary Member, Mr. R. W. Armitage; as Country Members, Miss Marjorie Govan and Mr. R. H. Goddard.

THE CUCKOO PROBLEM

Question by Member: Does the mother Cuckoo (of any Australian species) claim her actual progeny after they are reared to the flight stage by the foster-parent?

Answer (by Mr. A. H. Chisholm): It is doubtful if the adult female Cuckoo merits being called a "mother." The general subject of parasitism by Cuckoos is full of puzzles. There are one or two records of adult Cuckoos having been seen to feed young ones, but nothing definite is known on the question whether they claim the fledglings. Nor have the seasonal movements of Cuckoos been satisfactorily determined. As a group, they appear to move northward in the autumn, but odd numbers of various species have been seen in southern Australia during winter.

SISAL HEMP

Question by Member: Re Sisal Hemp, used for straining in producer gas units—Does any member know the plant, and is it readily grown?

Answer (by Mr. E. E. Pescott): The plant was grown in quantities at the Botanical Gardens by both Baron von Mueller and Mr. W. R. Guilfoyle; and prepared fibre is on show in the museum. A pamphlet on "Fibre-producing Plants," obtainable at the Public Library, gives full information.

NATURE NOTES

Mr. A. A. Brunton spoke on the nest of an English Thrush in an Elm tree at Carlton. In a discussion following, members stressed the advisability of planting suitable shrubs and small trees for nesting birds.

EXHIBITS

Mrs. Fenton Woodburn.—Bird-dropping Spider on its eggs.

Mr. A. A. Baker.—Crystalline Limestone and Fossils from Cave Hill Quarry.

Mr. H. P. Dickins.—Twenty studies of garden-grown native flowers.

Mr. E. E. Pescott.—Flowers of the Walking-stick Palm, from Queensland, and the Gippsland Giant Maidenhair Fern.

Mr. P. C. Morrison.—Long-tailed Wasp (*Megalyra*) alive. Camouflaged caterpillars of the Drinker Moth (*Pinara*, 2 spp.). "The Beginning of a Fossil," being water plants being covered by a deposition of limey matter. Specimen from Tom Pearce's Cave, Loch Ard Gorge, Pt. Campbell.

A STARFISH ODDITY

On August 4th I captured, at Mornington, a small starfish coloured grey in patches and having the arms edged with blue. On September 7th the animal lengthened in shape and four large arms gradually parted from the portion with five smaller arms. All the elastic-like thread broke when the two pieces were about an inch apart. The creature lived until September 15th.

M. E. FREAME.

LOCOMOTION IN MAMMALS

(Summary of lecture by C. W. Brazenor, of the National Museum, Melbourne, given to the F.N.C. on November 11)

The lecture set out the various avenues along which the mammalian limb has evolved, and traced the specialization in each.

It should be remembered that specialization is entirely distinct from evolutionary progress and should never be confused with it. Some of the most highly evolved animals retain primitive characters, whilst some of the more lowly ones have developed a high degree of specialization. Man, for instance, heads the mammals, but has what is in many ways a primitive foot; the horse, on the other hand, is much lower in the evolutionary scale but has feet that are very highly specialized. Examples quoted, therefore, are often of unrelated animals, and the sequence of their presentation is governed entirely by similarity in structure of limbs.

In order to realize the extent of specialization it is just necessary to find the primitive mammalian foot—the basic pattern upon which all is built. Many authorities consider that *Pareiasaurus*, a creature that lived in Mesozoic times, is a direct ancestor of mammals, a contention borne out by some features of its skeletal structure. The limbs of this animal are thick, it has five almost equal toes on each foot, and it stands with its heel and the flat of its feet upon the ground. This, then, is the design for the primitive foot; it is heavy, pentadactyl (five-toed) and plantigrade (*i.e.*, the sole of the foot rests upon the ground). An animal possessing such a foot will be slow and ungainly, and will move only on the surface of the ground.

Descendants of such animals multiplied, spread, and made their homes under vastly varying environmental conditions. From being slow movers on the surface of the earth they progressed to swift movement, some by running on all four legs, others by a hopping gait. Some burrowed into the earth, others lived in trees, and of these, some became further specialized as gliders. A few developed the power of true flight. Of those that took to water some spend only a portion of their time in that medium, whilst others do not leave it during their whole existence. In each and all of these branches adaption to environment has taken place and it is possible to illustrate degrees of specialization with examples from living mammals.

Speed on the earth's surface is related to the length and position of the bones of the feet. It has already been mentioned that mammals having short feet and walking upon their heels are slow and clumsy in gait; those that are progressively swift have comparatively longer and longer feet and walk more and more upon their toes.

The bear is one of the slowest and clumsiest of land mammals. It is big and strong enough never to have to run away from an enemy and in no case does it chase its food. It has retained the primitive ambulatory type of foot with five toes and it rests its foot and heel on the ground.

In progression through more speedy mammals the foot of a pig may be taken as the next step. The foot rests upon the extreme tip of the toes and the end of the metatarsals are off the ground. These bones are greatly lengthened and are reduced to two large centre ones and two smaller outside ones. The inner toe has disappeared and the animal's weight is taken upon the end of the third and fourth toes only.

In the camel the lengthening of the metatarsals is further developed. Three of the outside bones have gone and the remaining two are fused at their upper end into a single bone, which is divided at the distal end to articulate with the toe bones.

These illustrations point the road along which all the cloven-hooved animals have evolved—animals such as oxen, sheep, deer and antelope. They lost first their inner toe and then the outer two of the remainder. There are other mammals which, after losing the inner digit, then lost the fifth or outer one, leaving three in the centre. The foot of a rhinoceros illustrates this stage, and it is obvious what will happen next. The two outer bones of these three toes (second and fourth) will degenerate and disappear. In the foot of a horse this has happened. The animal walks upon the extreme tip of a single toe (third).

All those mentioned so far are cursorial mammals (*i.e.*, animals that run with the movement of alternate legs), but amongst swiftly moving forms must be included the saltatory or hopping mammals such as the jerboas, jumping shrews, kangaroos, etc. The hind limbs of all these animals have developed in size, but have more or less followed the rule regarding the affinity of speed with length of foot and degeneration of toes. The jerboa has a long foot and has lost the two outer toes (first and fifth); the kangaroo has a similar foot, but has lost the inner toe, and the second and third have diminished in size till they are useless as ambulatory organs. In further following the rule of speed, the saltatory animals, though often plantigrade at rest, rise on their toes whenever they commence swift movement.

In the fossorial or burrowing mammals the fore legs are usually the more specialized because they are the principal digging implements, the hind limbs being used only to scatter the loosened earth. The adaptations embrace the development of heavy claws and a spade-like foot with strengthened wrist and arm bones. The wombat, with short, powerful forelimbs and strong claws, is an example of moderate specialization. The forelimbs of the mole

are twisted so that the palms normally turn outwards, emphasizing the shovel-like character of the foot. It is immensely strong, and one of the wrist bones is developed to form a large anchorage for the heavy arm muscles. In the marsupial mole the nails of two fingers are broad, flat and spade-like.

The arboreal or tree-climbing mammals have two kinds of specialization: the development of hooked claws by means of which they may cling to branch or bark, and the development of an opposing digit or digits. The fore-leg in all cases tends to become longer in order to extend the animal's reach, and there is some modification of the bones of the fore-arm to allow the hand to be rotated to grasp a branch in any position. These last are well shown in the gibbon, an ape found in Malaya. The extreme degree of hooked claws is seen in the two-toed sloth, in which each front foot is reduced to two toes in a single sheath of skin from which spring long curved claws; the hand is reduced to a simple hook, by means of which the animal hangs from trees in an upside-down position. The opposing digit is best seen amongst apes and monkeys, and usually in this type of foot the nails degenerate and the fingers become spatulate at the tips in order to give a firm grasp.

All gliding mammals are also arboreal, and the foot specialization is much the same as in the latter group. The modification which makes gliding possible is an extension of skin on the sides of the body and limbs which acts as a parachute and allows the animal to volplane from one tree to another. There are gliders amongst rodents, insectivora, and marsupials. Typical examples are the placental flying squirrels and the marsupial flying phalangers.

Flight is developed amongst mammals only in the bats; specialization is the same in all species and consists of the lengthening of the fore-arm and hand bones. The wing of a bat may be likened to a spread hand, the fingers of which are connected by a thin tough membrane which also extends to the sides of the body and hind limb. The tremendously elongated and very light finger-bones are of no use to the animal in walking.

Modifications for life, or part-time life, in the water may, for the sake of convenience, be divided into three groups, though sharp division of these groups does not exist in actual life.

The first is a group which is equally at home in water or on land. One or both pairs of feet may be webbed and the tail is often paddle-shaped. The water rat, the beaver, and the platypus are progressive examples of foot-webbing.

The second group is almost entirely aquatic and spends only a small portion of its time on land. The seal is an illustration of this group. The body has become streamlined and the feet are flattened, paddle-like organs. The limb-bones are short and

strong, and the fingers and toes are heavy and have become adapted to paddle-like form; above the wrist and ankle the limbs have little movement.

The third group is wholly aquatic and quite fish-like in form. It is represented by the whales and dolphins. The body is smooth and hairless, the fore-limb is a flat paddle without nails, and the hind-limb has degenerated to extinction; all that remains of the pelvic girdle is a small floating bone, unconnected to any other, situated low in the animal's ventral region. The bones of the hand are more numerous than in any other order of mammals and in some species may number fifteen against the usual three. Practically all likeness to ordinary finger-bones has gone, and the articular surfaces are divided by pads of cartilage. Such animals never leave the water.

The above review has treated the subject only in the broadest way. Its principal aim has been to show that, diverse in shape and size though they may be, there is amongst the limbs of mammals a unity of order and sequence.

DOES THE LONG-TAILED WASP "DIVINE"?

At the November meeting of the F.N.C. I exhibited a living specimen of the Long-tailed Wasp (*Megalyra*). This is not an exceptionally rare wasp, but it is sufficiently uncommon to excite interest. It is said to be an expert at "divining," from the exterior, the presence of beetle grubs tunnelling in wood. Once the grub is located the exceptionally long ovipositor, guided and protected during the operation by its lateral sheaths, bores through the wood and deposits the egg within the grub, in which the wasp larva develops as a parasite. The wasp is said to be capable of boring through two inches of solid timber in this way, though I have not been able to discover an original description of the feat.

CROSBIE MORRISON.

[Is it not the case that the wasp does not actually bore through wood, but inserts the long ovipositor into cracks in the timber when it has detected the presence of a grub at the base of the crack?—EDITOR.]

CHRISTMAS MAILS

The Deputy Director, Posts and Telegraphs (Mr. R. N. Partington), is seeking the co-operation of all readers in regard to the posting of Christmas gifts and greetings. He would like such mail matter posted as early as possible and not later than Tuesday, the 17th December, and suggests that packets be endorsed "Do not open until Christmas." By doing this you will materially assist the Department and eliminate any possibility of your gifts and greetings not being delivered in time.

GERMINATION OF SEED

Seed of *Pimelea ligustrina* was sown in November of 1938. It commenced to germinate in August and September of 1940—nearly two years after sowing. The seed-box was kept in a glass-house and watered regularly.

R. C. PAINTER.

PLATE XV

*Pterostylis Baptistii*, FitzG.

A: A typical specimen. B: Specimen from habitat in deep forest.
 C: A petal. D: Labellum. E: Sinus of conjoined sepals (lower lip) from
 rear (filiform points removed).
 (For natural size of flowers, see letterpress.)

AN ADDITION TO THE ORCHIDACEÆ OF VICTORIA

By W. H. NICHOLLS, Melbourne

That the far-eastern confines of Victoria are happy hunting grounds for botanists has been well proven by recent discoveries there. Ferns new for Victoria have been found, a new Mistletoe "brought to earth," and curious Orchids, both epiphytes and terrestrial forms, have been added to the ever-growing list, one among them, at least, being "new to science."

The collector responsible for the majority of these finds (Mr. N. C. A. Wakefield, a school teacher) has given us still another noteworthy addition in *Pterostylis Baptistii*, FitzG., the finest member of the genus so far known. It is often referred to as "the King of Greenhoods."

Mr. Wakefield writes (11/11/1940):—*Pt. Baptistii* "was first found on a moist flat near Genoa Creek. There were two extensive colonies of some scores of plants, about twenty of which were flowering. Later, a few more flowers were seen beside the Prince's Highway at Scrubby Creek; and finally another colony was found near Marramingo Creek, several miles farther north. The plants were generally in, or near, clumps of Crimson Bottle-brush (*Callistemon*), and twice the Sickie Greenhood (*Pt. falcata*) was in association. These plants ranged from 15 cm. to 30 cm. high, the galea exceeding 5 cm. in length and 2.5 cm. broad."

Description of *Pt. Baptistii*, FitzG.*

Plant usually about 30-35 cm. high. Leaves basal, elliptical to lanceolate on long petioles, about 5-7 cm. long (the leaves ascending the stem and the petioles longer when growing among dense undergrowth); stem-bracts about 4-6 cm. long, about five, including the uppermost one. Flower solitary, large, translucent white, with green lines and brown markings; galea inflated at the base, erect then incurved, about 4.5 cm. long, with a short acuminate apex. Petals dilated. Lower lip cuneate erect, with a wide sinus, the filiform lobes reflexed and exceeding the galea. Labellum linear, compressed for about one-fifth of its length into a point; lamina almost straight, about 1.5-2 cm. long, the tip curved; a broad raised ridge along the centre (longitudinally), with a corresponding channel on the reverse; basal appendage linear, curved, shortly pectillate. Column erect, about 1.7-2.5 cm. long; upper angle of wings with a subulate tooth; the lower lobes oblong with in-turned ciliate margins. Stigma ovate-elliptical.

Flowering season: Late August to November.

Distribution: Queensland, New South Wales to East Victoria. (No portion of the State has been so much neglected as the far east, in the elucidation of its flora, and it is safe to prophesy that other floral treasures await the venturesome.)

Pt. Baptistii favours, generally, the dense scrubs, usually in the vicinity of streams or swamps. In some of its habitats farther north it has been reported, in favourable seasons, in myriads.

**Australian Orchids*, R. D. Fitzgerald, Vol. 1, pt. 1, pl. 2.

A CURIOUS "HONEYEATER"

By A. H. CHISHOLM, Melbourne

When is a Honeyeater not a Honeyeater? This query is not necessarily frivolous. It arises from the fact that at least one bird which has the name of "Honeyeater" rarely, if ever, takes nectar at all, but subsists largely, if not wholly, on berries of the mistletoe.

The species in question, the Painted Honeyeater (*Grantiella picta*) was very little known until recent years, and as it does not appear to have been discussed in the *Victorian Naturalist* it may well form the subject of a few notes. Indeed, special interest attaches to the bird, not only because of its rarity and its beauty, but because it is increasing in significance as an important agent in the spread of mistletoe.

A small bird (total length about six inches), the Painted Honeyeater is very pretty. The black of the head and back contrasts strongly with the white of the under-surface, and there are splashes of rich yellow on wings and tail. A pinkish-red beak adds to the colour-scheme. The yellow, no less than the black and white, catches the eye when the bird is in flight. In both sexes the colouration is similar, but the male is rather more showy. Moreover, the female usually lacks the brown spots which the male carries on the under-surface, mainly on the flanks.

John Gould found "this beautiful little Honeyeater" to be an inhabitant of "the interior of New South Wales." He discovered a nest with young early in September of 1839 and wrote a few notes on the species, including the comment that in actions and economy it differed materially from other members of the family. The nest he described as "the frailest structure possible."

That record was to be the only material one during more than sixty years, for A. J. Campbell, in his *Nests and Eggs of Australian Birds*, published in 1900, confessed that he knew nothing of the species and regretted that its eggs were "unknown." At about that time, however (December, 1899), the nest and eggs of the "lost" bird were chanced upon near Bathurst, and a year or so later it was found breeding on the site of the present Sydney suburb of Abbotsford. For about a dozen more years, then, the species appears to have slipped from sight, after which it was recorded intermittently at some few inland points in New South Wales and (surprisingly) in the Northern Territory.

From these scattered records it became apparent that the Painted Honeyeater was a rare bird, a lover of the dry sub-interior, elusive in movements, distinctive in its nesting habits, and quite unlike other "Honeyeaters" in its choice of food.

My own acquaintance with the bird dates from January of 1932. A letter received then brought news that the "Painteds" were at hand; a pair had been found nesting in the dry country near the

old village of St. Mary's, on the Sydney side of the Blue Mountains. The challenge of the "new" bird had to be met at once, and so, on January 31—a blistering day—five bird-men fared forth in a car loaded with two large movie- and three still-cameras, to cover perhaps more than a hundred miles on the off-chance of seeing, and at the most photographing, one small bird at its nest.

That search was a heavy job. Hour after burning hour went by as we raced across country and poked into this and that woodland. And it was not until the sun was declining that the search succeeded—a bird was discovered and followed to its nest in a drooping cluster of leaves some twenty-five feet from the ground. The surprising thing was that the nest could not be seen from the ground, even through field-glasses. We had to climb a neighbouring tree before discerning that a few fibres were woven to form a pendulous nest among the tea-tree leaves, and that two eggs reposed at the base of the flimsy structure.

During all this time, and while we watched them afterwards, the birds uttered no sound. They merely moved quietly about the nesting tree or fed on mistletoe berries in neighbouring trees. Once, they feasted in a cluster only twelve feet high, and we were able to appreciate the beauty of the plumage, especially when one bird stretched its wings and the westering sun played with the rich yellow bars. So, at dusk, we left them.

We had found our bird and the nest as well, but even then we were only moderately content. The few men who had met the species previously had described it as being quite talkative, and one farmer who knew the bird in this region some years previously declared that it called so often that he wondered if it lived on air. Yet, here was a nesting pair that in two hours uttered no sound. It was necessary for us to hear that voice before we could feel that we *knew* the Painted Honeyeater. Moreover, there was the question of photographs. Not one of the five cameras had been unstrapped on the day of discovery, partly because it was deemed unwise to worry the birds before the eggs were hatched and partly because the situation of the nest demanded ropes and platforms. Accordingly, another expedition was necessary.

Ten days later, while the sun of February burned at its hottest, three men left workaday Sydney to its business and went again to that tea-tree cluster in the St. Mary's woodland. A scout who had visited the nest on the previous Sunday had reported one young bird in the nest. Alas! when we got there the cradle was empty; tragedy had overtaken the nestling. Two hours, then, were occupied in hunting through the forest before we discovered the wilful "Painteds," and it was not until two more hours had drifted by that we heard a melodious piping arise—a clear deliberate, almost human whistle: "Georg-EEE, Georg-EEE,

Georg-EEE!" We heard this call only two or three times. That was sufficient. "Picta" was no longer a "mystery-bird."

For the rest, we revelled in the beauty of the birds as they swooped from tree to tree or feasted among the red berries of the mistletoe. Also, we marvelled at the quantity of berries which they ate and which passed through very quickly. Apparently the only sustenance afforded by this food comes from the jelly-like covering, so that it is necessary for the birds to eat persistently; and, as so many berries are swallowed, it is necessary that the stones be discharged as promptly as possible. Thus in all the time that we watched them those elves of the forest did only three material things: (1) They ate and discharged berries in large quantities; (2) they stretched their wings and preened their feathers, apparently to free them of the sticky mistletoe jelly; and (3) they rested quietly, which seems to be necessary after such resolute feasting. Manifestly, it is this extraordinary fondness for mistletoe berries that conditions the entire economy of this unorthodox member of the Honeyeater family.

Stimulated by the field experiences narrated above, Mr. K. A. Hindwood, of Sydney, published in *The Emu* for January, 1935, a summary of all the available information in regard to the Painted Honeyeater, together with a map showing the known distribution of the species and a coloured drawing (by Neville Cayley) of the two birds. Places indicated on the map were a spot in the Northern Territory, two in the interior of Queensland, some few in dry parts of New South Wales, and some few more in dry forests of Victoria.

The Victorian records begin with a reference in A. J. Campbell's book to specimens having been shot by Kendall Broadbent at Kew, Melbourne. No date is given, but it was probably when Broadbent (later attached to the Queensland Museum) lived in Victoria in the 1850's. Broadbent himself records, in a manuscript note in my possession, that he "shot *one* three miles from Melbourne."

Strangely, the Painted Honeyeater does not appear to have been noted in Victoria during some sixty years—from Broadbent's discovery about 1856 to 1916. In November of the latter year Mr. Hugh Collins, of Edenhope (near the South Australian border) heard the strange call for the first time and found a pair feeding young on mistletoe berries. In October of the following year he met the birds again and found nests, and then he saw them each springtime until 1927, after which they apparently failed to appear. In each of the years when they were noted the birds appeared in September or October and vanished during February or March.

Other published records for Victoria, to 1935, are as follow: Mr. F. E. Howe reported having seen the species only twice, once at Carinya, in the far north-west, and again at Parwan, 28 miles

PLATE XVI



Female Painted Honeyeater near nesting site, with skinned mistletoe berry for young.

The above photograph (by K. A. Hindwood, of Sydney) is one of several of the Painted Honeyeater which have been taken near Sydney in recent years. It shows the pretty bird to advantage, even though the rich gold of the wings could not be reproduced. When actually feeding the young, the parent clings upside down to the branchlets from which the nest is suspended. A coloured drawing of the male and female Painted Honeyeaters appears in *The Emu* for January, 1935.

north-west of Melbourne. (No dates given.) Mr. M. Cohn wrote that specimens had been seen at Bendigo in various springtimes from 1925 onward, and a nest was found in 1932. Mr. W. C. Tonge saw the birds at Eltham, 15 miles north-east of Melbourne, in the spring of 1923 and found a nest with young on December 27. After that Mr. Tonge did not see the Painted Honeyeaters until the spring of 1929, and after that again he did not see them until October of 1935. It is strange that breaks of five and six years appear to have occurred between visits, and strange, too, that Eltham alone (?) should be the favoured spot near Melbourne. Doubtless the visits are regulated by the supply of mistletoe berries.

For my own part, I have seen the species in three parts of Victoria—Eltham, Bendigo, and Maryborough. The Eltham specimens were Mr. Tonge's birds of 1935; I saw them in November of that year and was interested in comparing the calls with those of the Sydney birds of 1932. The voices were "the same, only different"—the Eltham birds also called "Georg-EEE, Georg-EEE," but the notes were less round and full than those of the Sydney birds, and seemed moreover to contain a curious burr. In addition, there was a piping chatter (since heard from other "Painteds") which suggested a call of the Brown Flycatcher. Two years later (November, 1937) I saw a Painted Honeyeater at Bendigo, and two years later again (October, 1939) I heard the distinctive "Georg-EEE" at Maryborough and saw two birds feasting in mistletoe. Incidentally, Mr. Hugh Milne, of Bendigo, told me that he had been seeing the species during several springtimes prior to 1937.

Now the "Painteds" have reappeared. During November of this year I located two birds in the Maryborough district, and in the same month members of the Melbourne Bird Observers' Club found a pair nesting at Bendigo.

Clearly enough, this strange and beautiful "Honeyeater" is becoming more plentiful than of yore. It was never seen in the Maryborough district during the many years I lived there, and had it frequented the Bendigo district in other days it would scarcely have been overlooked until 1925. Its increase, apparently, is coincident with the spread of the mistletoe—the plant has provided the bird with food and the bird has spread the plant. Indeed, it seems probable that the Painted Honeyeater is a major factor in the increase of the parasitic plant—a more important factor than the little Mistletoe-bird, so-called, which receives most of the blame. In the Bendigo district the Painted Honeyeater is thought now to be more plentiful than the *Dicaeum*, and certainly it is a more voracious feeder than the smaller bird.

In reflecting on these two species, a curious point arises: The staple diet of both is mistletoe berries and yet the "Mistletoe-bird" is more or less sedentary—it is seen in Victoria, for example, at

all seasons—while the Painted Honeyeater is a migrant. If the one can get sufficient food in Southern Australia at all seasons, why cannot the other do so? Is the Mistletoe-bird the more adaptable of the two—better able to obtain other food when mistletoes are not in fruit?

In any case, what becomes of the Painted Honeyeater in autumn and winter? It has never been reported in Victoria or New South Wales in those seasons, and an observer in the interior of southern Queensland says that it also disappears from there after the breeding season.

If we assume that the species generally becomes spread over the wide spaces of the northern interior during autumn and winter (the solitary Northern Territory record was made in August) are we to assume that mistletoe berries are available in those areas at the time? If not—and doubtless botanists can say something on that point—what do the birds feed upon in the “off” season?

Moreover, it would be interesting to know what factors govern the fruiting of mistletoe. Whatever those factors may be, the Painted Honeyeaters seem to “know” from a distance how the plants are faring, and adjust their movements accordingly. This strange “fore knowledge,” of course, is akin to that manifested by orthodox Honeyeaters in regard to nectar—they appear, or fail to appear, according to the state of the blossoms.

ON THE CLASSIFICATION OF SOME *PTEROSTYLIS*

By J. ROS GARNET, Melbourne

Mr. W. H. Nicholls, in a short commentary on the “Autumn Greenhood,” published in the *Victorian Naturalist* of July, 1940, expressed the opinion that *Pterostylis alveata*, Garnet, cannot be regarded as a valid species, and that such specimens of the plant as he had seen exhibited no marked features which could serve to separate it from Brown’s *Pt. obtusa*. As the person responsible for the publication of *Pt. alveata* as a species, I feel it incumbent on me to justify my action, since the plant, being as far as is known of limited distribution, may not be readily available for examination *in vivo* by many orchid students and collectors, who in such case will not be able to make a critical examination and must perforce rely entirely on published descriptive material.

In the classification of plants it is well to bear in mind the basic purpose of the Linnean system. Broadly speaking, it is designed to simplify and standardize the procedure of distinguishing or identifying organized forms, and it serves this purpose very well so long as its limitations are recognized. Such phenomena as variation, mutation, aberration and uncontrolled hybridization are factors that impose these limitations and in botanical studies they constitute

the major bane of the taxologist. However, few of us have any pretensions to the claim of being an authority in the somewhat obscure "science" of taxology, and most of us are quite satisfied if we can classify our specimens in such a way that the results of our labours are intelligible to others and do not lead to confusion.

In considering the specificity or otherwise of the plant I have named *Pt. alveata* it was recognized that it possessed affinities with already well-recognized species of its genus, and reference was made to three such congeners in the text of the original description (*Vic. Nat.*, 1939, LVI, 91-94). Plates were prepared with the object of portraying the salient features of resemblance of the several species, but considerations of space led to the substitution of a plate figuring dissections of *Pt. alveata* alone.

Those familiar with the structure of the *Pterostylis* could not fail to observe that the column, as quite faithfully delineated, might easily be taken as representing the column of any one of several species such as *obtusa alata*, *Toveyana*, and *decurva*. In this respect a parallel example is afforded by the close similarity in column structure of species in the "Rufa" group of *Pterostylis*. Other examples will readily occur to the reader. In passing, it should be noted that variations in such features as turgidity or the precise shape of the stigma, the angle of deflexion of the column below the stigma, or the presence or absence of a point formed by an extension of the upper border of the column wings should not be regarded as especially significant in the differentiation of members of such a group. Each of these is occasionally and particularly mentioned as constituting a factor in diagnosis, but the truth is that the first two often vary considerably from flower to flower according to the stage of development of the flower and according to the water-vapor tension at the surface of the structure. The points of the column wings frequently vary from specimen to specimen, particularly in species of the "Rufa" group, and may be either prominent enough to be readily detected, present but obscured by a tuft of ciliate hairs or practically obsolete.

As one continues a detailed comparative study of any such allied forms, one will generally find a lack of uniformity in these details and it becomes evident that the properties used to characterize a particular plant and separate it specifically from its allies must be colligative. In other words, its specific identity will be determined by a survey of the collective observable differences and resemblances between it and its allied forms. This rule has been applied in the case of *Pt. alveata*. The grounds on which it was deemed sufficiently distinct to warrant its being given specific rank can be briefly stated:—

- (1) The peculiarities of the labellum both in relation to the column and as an isolated segment.
- (2) The appearance of the galea and more particularly the peculiarities of the upper frontal margins of the conjoined lateral sepals.

- (3) The fact that the plant occurs in colonies.
- (4) Consideration of the number of specimens from distinct colonies—all showing notable similarity in general aspect and form and lack of close resemblance to any form of *Pt. obtusa* with which I was acquainted.
- (5) The absence of any specimens resembling the Snake Island plants in the National Herbarium collection of *Pt. obtusa*. The entire collection was examined and in no specimen, where the labellum was discernible or interpretable, could there be found a similarly shaped labellum or even any with an emarginate tip.

Even had the plant differed from *obtusa* in respect of the labellum alone the precedent established by the separation of *Pt. mutica* and *Pt. cyanocephala*, on the ground of difference in shape of the appendage to their respective labella, would have, for many, provided ample justification for the acceptance of *alveata* as a distinct species.

As Mr. Nicholls points out in his commentary, *Pt. obtusa* is very variable, and he indicates that this variability is seen in the flowering period, the foliage of the flowering plant, the coloration and size of the flower, the length of the labellum and the extent of extrusion of its top. A further feature might well have been included, namely, the variation in length of the points of the sepals.

Occasionally specimens of *obtusa* are seen which, while normal in other respects, possess exceptionally long points to the sepals, and in this they outwardly resemble an occasional form of *decurva*, which exhibits unusually short points. It should be remembered that these variable features mentioned above are by no means restricted to this member of the genus, the first three being seen in almost every *Pterostylis*, but from my own experience (no doubt more limited) I have been unable to detect significant variation within each of the three species in three details, namely, in the length of the labellum *in relation to the column*, in the shape of the labellum and in the shape of the upper front margins of the lateral sepals. For the sake of clarity they are tabulated below:

<i>Pt. obtusa</i>	<i>Pt. decurva</i>	<i>Pt. alveata</i>
Labellum oblong, tip obtuse, not emarginate, distal end curved forward very slightly or even not at all, and in view of the shape of the lip of the conjoined lateral sepals does not protrude beyond the frontal margin of these sepals, although certainly, when viewed in profile, the tip (depending on the actual length of the lamina) is visible to a greater or less extent.	Labellum oblong, tip obtuse, not emarginate, distal end curved forward markedly and protrudes beyond the frontal margin of the conjoined lateral sepals.	Labellum oblong-ovate, tip bluntly pointed and sometimes emarginate, distal end curved forward, but less markedly than in <i>Pt. decurva</i> , and protruding beyond the frontal margin of the conjoined lateral sepals.

In whatever position it may happen to be, it does not extend above the level of the summit of the column and thus the points of the column wings are not obscured by the tip.

The lip of the lateral sepals, when viewed from the front of the flower, presents an outline that is distinctive—from each side it curves upwards towards the junction and then curves very slightly downwards at the junction, rather in the manner of two S's laid end to end.

Whether "sprung" or inclined forward, the curved tip is invariably higher than the summit of the column and thus the points of the column wings are obscured.

The lip of the lateral sepals, when viewed from the front of the flower, exhibits a wide V-shaped outline.

Whether "sprung" or inclined forward, the curved tip is invariably higher than the summit of the column and thus the points of the column wings are obscured.

The lip of the lateral sepals, when viewed from the front of the flower, presents a V-shaped outline that is rather narrower than that seen in *Pt. decurva*.

If further discussion is needed to justify the retention of *alveata* as a species and to emphasize the convenience in classification by adopting such a course, one has but to amplify the rest of the previously mentioned five points.

I would not care to be dogmatic in stating that neither *Pt. obtusa* nor *Pt. decurva* occurs in colonies, but in my experience they do not—at most they appear in scattered groups, whereas *Pt. alveata* was definitely reported as growing in compact groups "in patches of about five to eight square yards." This gregarious habit is observed very strikingly in such definite specific types as *Pt. nutans*, *Pt. concinna*, *Pt. revoluta* and *Pt. truncata*, to mention but a few.

Since June, 1939, I have examined more than two dozen specimens of *Pt. alveata*, from both Little Snake Island and Genoa,* and it may be of interest to record that several of the original 1939 specimens from the island habitat were cultivated and reproduced flowers in the autumn of this year (1940) which showed no departure from the main features of the type. Consequently, I cannot subscribe to Mr. Nicholls' hypothesis that the specimens he has viewed represent aberrant forms of *Pt. obtusa*, for the reason that it is entirely unlikely that specimens taken at random from several colonies and at different times and from such widely separated localities as Little Snake Island and Genoa should, without exception, aberrate along similar lines and that no normal forms of *obtusa* should have been collected. The foliage of the

*A number of plants was sent to me in March of this year by Mr. N. A. Wakefield, a well-known orchid student now at Genoa, in which district the specimens were collected.

various specimens of *Pt. alveata* certainly does vary a lot, and some indication of the nature of this variability was noted in the original description and in the accompanying plate, but, whether uniform or variable, foliage is no certain aid to differentiation. As we have read elsewhere, the foliage of *Pt. obtusa*, too, is variable.

The only amplification of my fifth point that I would like to make concerns the shape and emargination of the tip of the labellum. With the material at my disposal in June and July of 1939, I was impressed with the fact that the somewhat constricted tip of the labellum was, in most cases, slightly cleft at the summit and at first glance resembled, in this respect, the labellum of *Pt. Toveyana*. Specimens since received from both the island and Genoa suggest that this small V-cleft may be absent or inconspicuous.

In conclusion, it should be pointed out that figure B in the plate accompanying the original description rather fails to show the constricted appearance of the distal one-third of the labellum—a constriction emphasized by the alveate nature of the lamina. It portrays the segment fully and carefully extended. The labellum of *Pt. obtusa*, under the same conditions, is of an entirely different shape—namely, oblong and blunt-tipped.

SUMMARY

In the foregoing I have endeavoured to show that with the knowledge and information at present available it would be unwise to withdraw *Pterostylis alveata* from the list of Australian species. Our present classification recognizes the convenience of distinguishing between such *Pterostylis* as *cianocephala* and *mutica*, *alata* and *robusta*, *revoluta* and *reflexa*, and *obtusa* and *decurva*, and I have tried to show that there is as good and as sufficient a reason for distinguishing between *obtusa* and *alveata*.

Mr. Nicholls has advanced inadequate argument to show that they are the same species, for the contention that individual variation (even if valid) is sufficient to explain the differences can be used to invalidate innumerable species, especially where such species have been created from a single specimen or from very few specimens. Readers will call to mind instances among the larger genera, such as *Pterostylis*, *Prasophyllum*, *Caladenia*, *Thelymitra* and *Diuris*, where this principle could be applied with results that would lead to a spate of confusion for both present and future workers.

The final arbiters in the differentiation of our indigenous plants, especially where their specificity is questioned, will, I believe, be the plant geneticist and the culturist who can succeed in raising flowering specimens from seed. Until such scientific data is available we must be content to accept somewhat arbitrary distinctions between geographical species, hybrids, mutants, varieties and species.

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EXCURSION

SATURDAY, DECEMBER 14.—Eltham. Objects: Birds and Native
Flora. Leader: Mr. A. S. Chalk. Train leaves Princes Bridge
at 1.20 p.m., arriving Eltham about 2.5 p.m. Return fare, 2/-
second class.

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Vol. LVII, No. 9



JANUARY, 1941



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

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MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, JANUARY 13, 1941

1. Minutes.
2. Subject for the Evening: "Bats," by Mr. C. L. Barrett, F.R.Z.S., and Mr. P. Crosbie Morrison, M.Sc. Illustrated by the Epidiascope and Motion Pictures.
3. Correspondence and Reports.

4. Election of Members.

AS ASSOCIATE MEMBERS.	PROPOSER.	SECONDER
Mr. D. F. Hall, "Balgay," 406 Glenferrie Road, Kooyong, S.E.4.	Mr. L. W. Cooper	Mr. F. S. Colliver
Mr. R. M. Withers, "Kenwyn," Springfield Road, Blackburn.	Mr. L. W. Cooper	Mr. F. S. Colliver

5. Nominations for Membership.
6. General Business.
 - (a) Forthcoming Excursions;
 - (b) Questions by Members.
7. Nature Notes.
8. Remarks by Exhibitors.
9. Conversazione.

The Victorian Naturalist

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January 8, 1941

No. 685

PROCEEDINGS

The monthly meeting of the Club was held at the Club Rooms, Royal Society's Hall, on Monday, December 9, 1940. The President, Mr. L. W. Cooper, presided and about 80 members and friends attended.

OBITUARY

The President announced the death of Mrs. A. A. Brunton, a valued Club Member, who had on many occasions given hospitality to Club excursions at her cottage at Kinglake. The President also announced the death of Mrs. T. S. Hart, the wife of a very old Club Member. Members stood in silence as a mark of respect to their memory.

SUBJECT FOR THE EVENING

An illustrated address was given by Mr. F. E. Wilson, of Melbourne, on "Some Entomological Reminiscences." He related various experiences in collecting insects in several parts of Australia, and mentioned some of his outstanding "captures." Mr. C. French and Mr. A. D. Hardy contributed to the discussion, and the President expressed the thanks of the Club to Mr. Wilson for his interesting address.

CORRESPONDENCE

A Christmas Card conveying the Season's Greetings to members was received from Mr. D. Geddes, now in Palestine.

REPORTS OF EXCURSIONS

The President reported on the Excursion held at the Kew Lagoons, with Miss Raff as leader. Mr. A. D. Hardy expressed the thanks of the Microscopical Society for the invitation to members to attend this excursion, and stated that many did so.

ELECTION OF MEMBERS

The following were duly elected as Ordinary Members:—Mrs. C. Ewart, Miss C. M. Bourne, and Dr. D. Roseby; and as Associate Member:—Master R. B. Ewart.

DONATIONS

The President announced that Mr. G. Coghill had presented to the Club Library Campbell's "Nests and Eggs of Australian Birds," in one volume; and that Mr. C. J. Gabriel had presented a large number of early copies of the *Victorian Naturalist*. To those members the thanks of the Club was expressed for their donations.

NATURE NOTES

Mr. C. J. Gabriel spoke of the reported trapping of a Shoveller Duck by a fresh-water "Mussel." He mentioned that in the collections of the S.A. Museum similar specimens were preserved, and stated that this was one way whereby inland waters could be stocked with these molluscs.

Mr. F. S. Colliver reported an interesting discovery of fossilized remains of parasitic worms in coprolites of the extinct fish-lizard, *Ichthyosaurus*.

ANNOUNCEMENT

At this stage the President announced that the Hon. Secretary was being married at Christmas to a Club Member, Miss M. Ferguson; and on behalf of the members wished the parties all happiness. As a token of the members' good wishes a cheque was handed to the Secretary, with instructions that something for the future home be purchased. Mr. Colliver thanked the members and stated he hoped to remain long in association with the F.N. Club.

CHRISTMAS GREETINGS

The President expressed the Season's Greetings to all members, and then adjourned the meeting for the conversazione.

EXHIBITS

By Mrs. M. E. Freame:—Phyllodoca and proboscis, fin and teeth of Sunfish, and Nereid Worm, from Altona.

By Mr. C. French:—Hyacinth Orchid (*Dipodium punctatum*) grown in a flower-pot for the last three years, and now flowering for the first time. The specimen is probably the first *Dipodium* ever cultivated and was grown in ordinary garden soil by Mr. V. Bennett of Canterbury. The species is leafless and presumably symbiotic.

Mr. H. P. Dickins:—Studies of native flowers.

Mr. C. J. Gabriel:—Fresh-water shells from the Murray River (*Hydridella angasi*, Reeve, and *H. australis*, Lam).

Mr. C. Daley:—Photographs of Aboriginal Midden at Ranelagh, Mt. Eliza, and shell deposits *in situ* on rocks above ordinary tidal action. Garden-grown shrubs: Christmas Bush, N.S.W. (*Ceratopetalum gummiferum*), Christmas Bush, Vic. (*Prostanthera lasianthos*) and Geraldton Wax-flower (*Chamaelancium uncinatum*).

Mr. R. G. Painter:—Garden-grown Native Flora: *Melaleuca hypericifolia*, *M. thymifolia*, *Callistemon citrinus*, *Pimelia decussata*, *Isotoma petraea*, *Sollya heterophylla*, *Scaevola aemulum*, *Swainsona galegifolia*, *Stypandra caespitosa*, and *Graptophyllum Earlii* (Queensland sub-tropical, glass-house grown).

Mr. Wright:—Photographs of Queensland Snakes.

NOTES ON MT. BUFFALO

By (Miss) M. L. WIGAN, Melbourne

A visit to Mt. Buffalo from the 10th to 18th of April last was full of interest. This was helped largely by the vagaries of the weather, which from summer-like temperatures for the first 2½ days (including a fog lasting till mid-day) changed to rain, sleet, a big fall of snow, and finally to normal autumn conditions. The clearing of the weather after the snow gave some magnificent cloud effects, especially those of mystic lakes in the extensive valleys below.

For the first 2½ days it was possible to find late blooms of many flowering plants. Fine specimens of the Mountain Daisy bush (*Olearia flavescens*), Azure Daisy (*Brachycome scapiformis*), Alpine Everlasting (*Helichrysum lepidophyllum*), and Golden Everlasting (*Helichrysum bracteatum*) were worthy of notice. The outstanding find was of some excellent specimens of the Mountain Gentian (*Gentiana diemensis*). As this is a spring flowering plant it was rather remarkable to find it in bloom at this time of the year. Striped Hakea (*Hakea vittata*), a Mallee plant growing on the plateau, and transplanted to "The Chalet" garden, was growing vigorously. During a walk to Reed's Lookout a so-called black snake (3 ft. 6 in.) was killed. It was actually a dark copperhead snake (*Denisonia superba*), which is a denizen of this region.

One evening hundreds of Bogong Moths (*Agrotis spina*) were seen around the lights of "The Chalet" verandah. This is one of the cut-worm moths, which are diurnal as well as nocturnal flyers. The caterpillars, when migrating in numbers, eat by day as well as night, and are a serious pest to all cereal crops.

Birds were numerous before the change in the weather, especially round "The Chalet" and Lake Catani. Parties of Flame Robins in immature plumage were interesting; they were singing

delightfully and were evidently gathering for their trek to the lower levels southwards. A Bronzewing Pigeon was heard near "The Chalet" and a Lyrebird was seen displaying near the Underground River. A pair of Little Grebes were seen on Lake Catani, they having arrived a fortnight previously. Grey Ducks on this lake have increased to about three dozen. Only two Little Pied Cormorants were in residence. A Black Cormorant was seen one morning before breakfast and looked uneasy in its surroundings. In the afternoon it was seen to rise off the lake and soar in ever higher and smaller circles till it finally made off in a N.E. direction. *Eucalyptus Mitchelliana* was in flower and was attracting bees and at least four species of Honeyeaters, including the Brown-headed Honeyeater.

The Brown-headed Honeyeater, Black Cormorant, and Little Grebe are new records for the plateau.

When the snow fell most of the birds disappeared to the warmer gullies and valleys. Flame Robins in brilliant plumage were most conspicuous amongst those that remained. Another note of colour was a Scarlet Robin, together with a Diamond Firetail.

After the snow had disappeared it was a most pleasing experience to see, and hear, the return of the birds in the early morning. Amongst these were: Grey Currawong, Pied Currawong, Crimson Rosella, Peregrine Falcons (two birds), Grey Shrike-Thrush, Yellow-tailed Black Cockatoo.

The one discordant note was the damage by bushfires which has scarred this fair region.

I am indebted to the National Herbarium for naming of plants.

NOTES ON THE HUNTSMAN SPIDER

By EDITH COLEMAN, Blackburn, Victoria

A remarkable parasite has been seen to emerge from the body of a female Huntsman Spider (*Isopeda immanis*). The spider was enclosed in a glass jar at Eltham (7/4/40). When I reached home the parasite had emerged. This was the third time we have noted a similar parasite associated with this spider—at Blackburn, at Healesville, and at Eltham.

The specimen was chloroformed and placed in formalin. I photographed it on August 14.

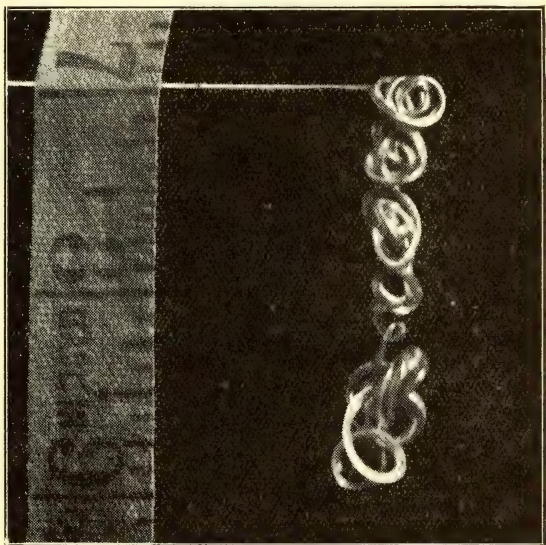
It seemed remarkable that the writhing worm should be so much greater in bulk than the abdomen of the spider. She seemed, however, none the worse for her ordeal, and has since made history.

With an adult male she was confined in a larger glass cage. After hibernating over the winter she made her egg-sac (4/11/40), her mate appearing to take a great interest in the proceeding.

Only on a few occasions have I known the male adult to survive a winter in captivity. This one is still active and appears to be sharing the "brooding," for he rests either upon the body of the female, or upon part of the sac. This position of the male upon the female is quite usual. I have assumed that it offered safety, for in this position, it is not possible for her to attack him. But in the present instance such a precaution is not imperative, for the spiders are on friendly terms. There is much evidence, too, that the male is usually aware of hostility.

The egg sac was made, as usual, on the wall of the cage, and when completed was removed to the dark roof. The reason for this is obvious.

The spiders always rest on the roof during the daytime, coming down the walls at night. As the sac is made at night, it is placed on the wall—her night-time position. Next morning she carries it to the roof to secure for it, as well as for herself, the gloom she loves; but, from this position it is not again removed, nor does she leave the sac during the daytime. She may



Parasite from body of female Huntsman Spider.

leave it for a few moments in the evening—a wise precaution which ensures that the sac is never soiled, or she may leave it to capture a fly which she appears to regard as a menace to her sac. In normal circumstances she probably takes no food until after emergence of the spiderlings.

It is often stated that the Huntsman Spider carries her sac about with her; probably an impression gained by those who have watched her remove a sac to its permanent position. I have watched the construction and final anchorage of some score of sacs, and in every instance she has remained motionless day-long, and during most of the night, until the young emerged.

At the present time, six mother Huntsman Spiders are brooding, motionless day and night, as they have been all through November.

AN ADDITION TO THE VICTORIAN FERN FLORA

By N. A. WAKEFIELD, Genoa, Victoria

For the latest addition to our Victorian fern list, we are indebted to Mr. W. Robinson, a worker on road and bridge contracts, who recently brought the writer a small specimen of *Lindsaya microphylla* Swartz, from the roadside at Karlos Creek, near Mount Drummer.

Karlos Creek flows through typical East Gippsland jungle, but a visit to the locality shows that this patch of *Lindsaya* does not occur in the jungle; it is on higher ground, where one would least expect to see any fern other than Common Bracken. The colony contains over 30 plants, situated on the clay-covered butt of a log which has fallen into an excavation made when this section of the Princes Highway was first built, about 24 years ago.

The description of the plant is as follows:—

"Rhizome knotted, shortly creeping. Fronds 6 in. to 1 ft. or rarely 1½ ft. high, bipinnate, the main rhachis wiry but slender, usually flexuose. Primary pinnae ½ to 1 in. or the lower ones nearly 2 in. long. Barren pinnules varying from ovate to lanceolate, toothed or lobed; fertile ones obovate cuneate or almost fan-shaped, equilateral, 1 or 2 or rarely 3 lines broad, undivided with a continuous sorus, or notched or lobed with the sorus interrupted." (From *Flora Australiensis*, by George Benthham.)

Distribution: Queensland, New South Wales and Victoria. (E. Karlos Cr. r.)

Small Wedge Fern is suggested as the vernacular name.

The distinguishing feature of the genus *Lindsaya* is the long indusium opening outwards along the margin of the pinnule. There are three Victorian species which may be identified by the following key:—

Fronds simple pinnate . . . *L. linearis*.

Fronds compound, pinnules small, triangular . . . *L. microphylla*.

Fronds compound; pinnules large with obovate segments . . .
L. cuneata.

All field workers will be familiar with the little Screw Fern (*L. linearis*), of the forests and heaths; but the Wedge Fern (*L. cuneata*) is very rare in this State, being known only by a few records from National Park, Wilson's Promontory.

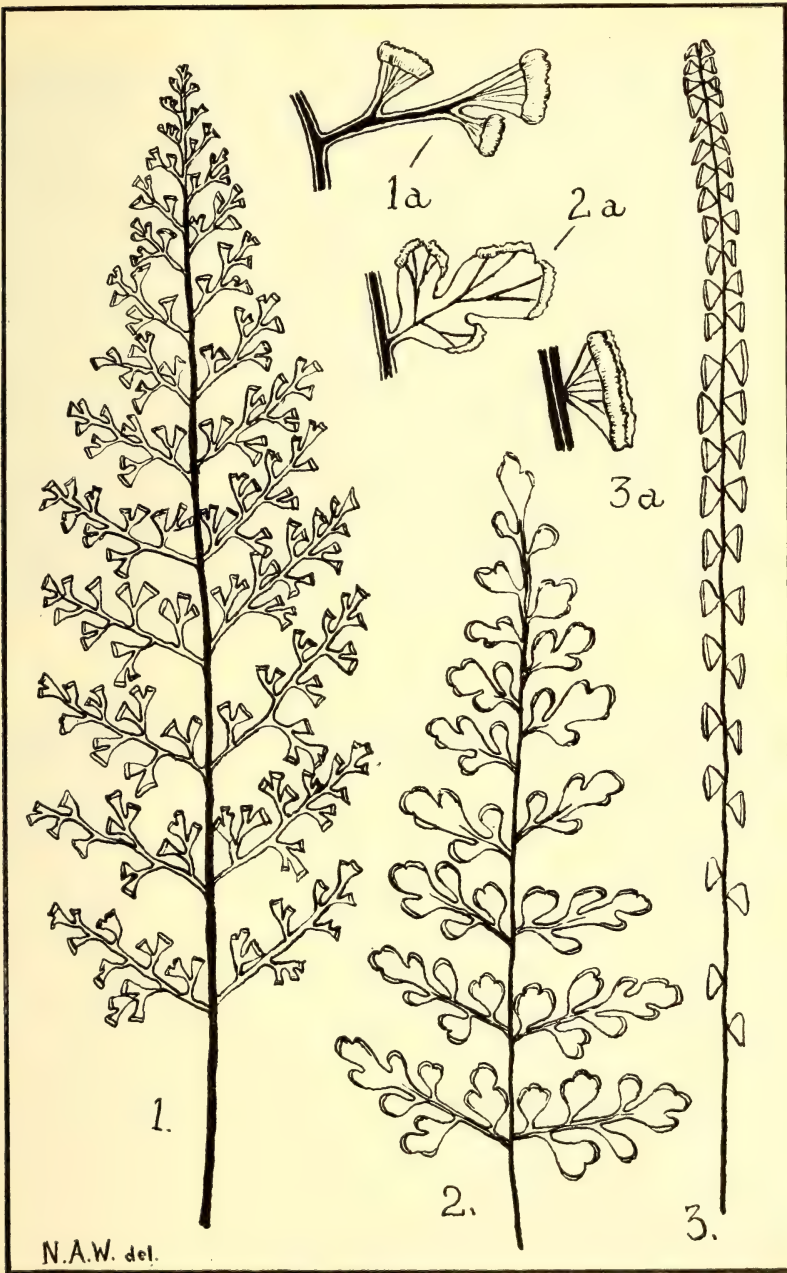
Key to Illustrations:—

1. *L. microphylla*; 1a. a secondary pinna.

2. *L. cuneata*; 2a. a pinnule.

3. *L. linearis*; 3a. a pinnule.

Fronds are shown natural size; pinnae are variously enlarged.



Genus *Lindsaya*.

NOTES ON THE BARN OWL

By D. J. DICKISON, Melbourne

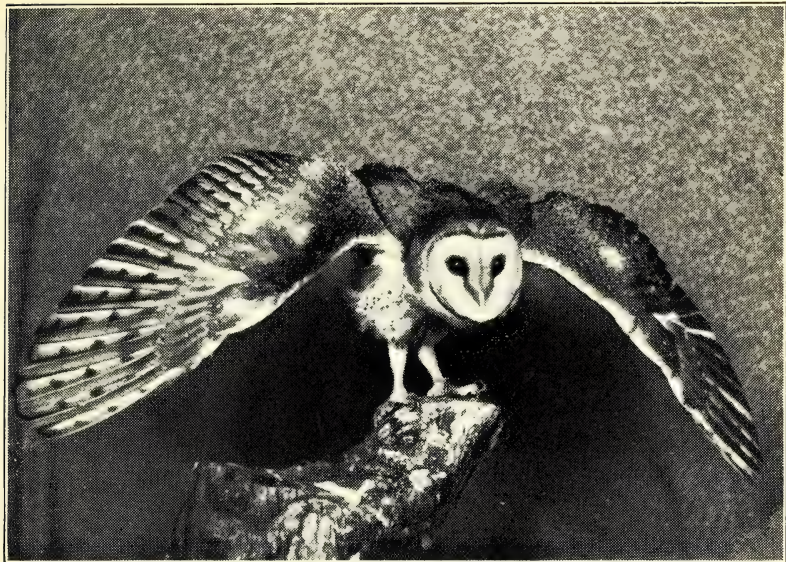
The Barn Owl, which has practically a world-wide range, is one of our most plentiful nocturnal birds of prey. Even with the extension of settlement it has readily adapted itself to new environments and on many occasions it has been seen within the city and suburban areas. It avoids the heavily timbered country, but in the open belts of box timber on the plains, particularly around Melton, it is still very numerous.

While most species of Owls appear to be stationary in their habits, Barn Owls, apparently governed by the food supply, move about a good deal. Wherever a plague of mice or rats occurs these birds are almost certain to appear, but with the disappearance of the rodents the Owls either perish or move on to other parts where their food may be plentiful.

Formerly known as the Delicate Owl, this bird has a beautiful creamy-white breast faintly speckled with brown, and the wings and back are a lovely shade of grey. It is a most conspicuous bird in the daylight. The name of "Delicate" applies equally to its health as it does to its plumage. During the many years the late Donald Macdonald conducted his column of Nature Notes in the Melbourne *Argus* he received from time to time large numbers of Barn Owls that had been picked up dead in various parts of Victoria. These epidemics would occur at intervals of several years, but the mortality on such occasions was extremely heavy. In most cases the birds were emaciated, as if they had gradually starved to death, but such conditions seem hardly possible in this State, where a fairly plentiful supply of food is always available to both diurnal and nocturnal birds of prey. Such epidemics amongst Barn Owls have been known to occur in North America, where the severe winters are considered the cause of the mortality. Even near Melbourne, where I have had several birds under observation, it was customary to find, after a time, the bird lying dead near its camping tree. Apart from the fact that the birds are in a starved condition it has never been established that scarcity of food was responsible for their deaths.

A broken-off branch, the hollow of which extends right down into the trunk of the tree, is the place usually selected for these birds for camping. I have not yet flushed a bird from a hollow which did not extend for many feet down into the tree, though, judging by the promptness with which the bird will emerge from the entrance when the tree is tapped, it seems almost certain that they do not go down the full length of the hollow, but remain

PLATE XVII



Adult Barn Owl on the defensive.



Barn Owlet, about one month old.

Photos. by David Fleay.

within a few feet of the entrance. Like most Owls these birds do not flush readily from their eggs, especially when incubation has commenced.

Unlike the Boobook Owl, this bird rarely perches in open trees during the daytime; when it does do so it is such a conspicuous object that it is tormented by most of the smaller birds of the bush. Up till a few years ago I used to see an occasional bird in the timber at Ashburton (near Melbourne) and for several months during the breeding season a pair occupied the same hollow in a large red gum near the Burwood railway station. It was not possible to ascertain whether they were nesting as the tree was too thick to climb. Some months later, however, one of the birds was found near the tree, dead. For at least two years another bird was occasionally flushed from a hollow of a dead tree at Melton, but its mate was never located. Just on dusk this bird would emerge from the hollow and fly across to a haystack to prey on the mice. This bird, too, was eventually found dead near its feeding place.

As far as I have been able to ascertain, the Barn Owl does very little damage to bird-life. It lives largely on mice and rats and I have frequently seen it drop from a branch on to large insects on the ground. The indigestible food matter swallowed by this bird is afterwards ejected in the form of pellets, which are more than an inch long and over half an inch thick. These pellets are composed of the fur and small bones of the rats and mice that have been devoured, and form ample proof of the bird's diet.

In December, 1937, a bird was flushed from a hollow of a box tree in Mr. Davey's Sanctuary at Toolern Vale. It continued to use the hollow for camping up till 1940, but there were many occasions on which it failed to emerge when the tree was tapped. Later it was discovered in another hollow a few hundred yards away, but, after being disturbed a few times, it eventually deserted the hollow. Then, one evening, it was discovered that there was quite a colony of birds in the vicinity. Apart from six birds that were being watched in various trees, others were heard calling elsewhere.

I was afterwards informed that, not far from where I had seen all these birds, a man passing along the road during the winter evenings in June had heard strange calls of young birds emanating from hollows in a tree by the roadside. On investigating the locality one evening, not long after dusk, I heard hissing sounds coming from a certain tree and within a few minutes a Barn Owl was seen to fly from one of the hollows. During that evening no fewer than five birds were seen to leave various hollows in the tree, but most of the birds, presumably the young

ones, all emerged from a broken-off vertical branch whose hollow must have extended a long way down. The young ones could be heard scrambling up inside, and once they reached the entrance they would sit there and call their hissing note. While they were perched there the old birds would occasionally bring them food, but usually it would be fully twenty minutes before they would fly away, and then another young one would be heard scrambling up the hollow, only to remain at the entrance to the hollow for a long interval.

A strange feature about those birds, both the young and adults, was that when they left the hollows, instead of flying away in search of food, they would just lurk in the trees close by and call frequently. At no time did they seem anxious to satisfy their hunger.

Although I presumed this gathering of Barn Owls to be the adults and young ones, I had no proof that they were. According to American writers these birds congregate in small colonies and it is recorded that on one occasion in U.S.A. as many as fourteen birds were seen to fly out of one tree. It has also been stated that the young Barn Owl in America attains full adult plumage in from seven to eight weeks. With the aid of a powerful torch I was able to get a good view of the birds, but, as far as I could see, all the birds were alike in plumage.

Barn Owls have at least two calls. One note, which was uttered before they emerged from the hollows, was in the nature of a long sustained hiss, but once the birds began to fly about amongst the trees they frequently made their usual call, which is more of a short scream than a screech. I have noticed a good deal of variation in these calls and one particular bird had a call not unlike the plaintive cry of the Black Cockatoo.

NOVEL CROSS-BREEDING

Dr. L. J. Clendinnen, of Melbourne, reports a remarkable case of inter-breeding among Australian birds.

A female Gang-gang Cockatoo with an injured wing having been given him, he placed it in an aviary at his mountain home (Kallista) with a male Galah. Although belonging to different genera, the two Cockatoos bred and hatched out two young. Subsequently, Dr. Clendinnen released all four birds. One of the young ones was shot by some "sportsman," but the others returned to their aviary-home. Last year the Gang-gang laid again but deserted the eggs. This year they again have two babies. In each instance the young birds show a quaint mingling of the contrasting colour-schemes of their two parents.

This appears to be the first record of Gang-gang Cockatoo breeding in captivity in Australia. Indeed, the only record of the kind that can be found relates to a pair of Gang-gangs which bred in an aviary in France in 1921.

PLATE XVIII



Segment of *Thismia Rodwayi* from Sherbrooke Forest, October 26, 1940. This flower has developed from a bud in an observation box. (Photographed November 11.)



Thismia Rodwayi, Sherbrooke, 1935.

FURTHER NOTES ON "FAIRY LANTERNS"

By DOROTHY G. COLEMAN, Blackburn, Victoria

Four years ago I recorded the finding of "Fairy Lanterns," *Sarcosiphon Rodwayi* (F. v. M.), Schltr. in Sherbrooke Forest, Victoria (*Vic. Nat.* Jan., 1936). Since then the name has reverted to *Thismia Rodwayi*, F. v. M. (F. P. Jonker: "A Monograph of the Burmanniaceae.").

Further specimens were collected on October 9, 1938, and October 26, 1940. In October and November of 1939 I made several excursions to the forest without finding a trace of the plant.

The flower resembles a glowing, amber-coloured lantern, two-thirds of an inch high, in form and texture remarkably different from that of any other recorded Victorian plant. It was first discovered near the estuary of the Derwent, Tasmania, by the late L. Rodway, fifty years ago, and was described by Baron von Mueller as *Thismia Rodwayi* (*Proc. Roy. Soc. Tas.*, 1890, and *Vic. Nat.*, Dec., 1890). The Baron wrote: "For Australian phyto-geography, the finding of a *Thismia*, not as might have been looked for in N. Eastern Australia, but in such an extreme extratropic isolation, is one of the most remarkable additions to our recent knowledge in this direction."

It is indeed a surprising fact that the species nearest to *Thismia Rodwayi* is *Thismia Americana* (Pfeiffer) collected near Chicago (Ill.) in open prairie.

The known distribution of *Thismia Rodwayi*, itself, is full of interest. So far it has been collected near the estuary of the Derwent and on the slopes of Mt. Wellington, Tasmania (Rodway); at Opepe, fifteen miles from Lake Taupo, New Zealand (Hill and Cheeseman)*; and now this range has been extended to Sherbrooke Forest, Victoria.

All the plants so far discovered at Sherbrooke have been growing in association with roots of either *Bedfordia* or Hazel *Pomaderris*. As the majority of flowers, although fully expanded, had not reached the surface of the forest floor, it seems probable that pollination depends upon soil fauna. In each instance the soil has been loose and crumbly. The plant appears to grow in one direction for a period, then to make an abrupt change of direction almost at right angles, sometimes dying off at the point of altered direction. In this way a plant system may consist of a number of separate segments.

The illustration shows one such segment. This plant was removed when in bud. Placed in some of its own soil, and set close to the removable glass wall of a seed-box, the flower

*Described as *Bagnisia Hillii* (Cheesem.).

developed and fully expanded. The glass is covered with a cloth to exclude light, giving as nearly as possible, natural conditions, and allowing the plant to be examined without being disturbed. The flower remained fully expanded for ten days. At the end of this period the perianth appeared to liquefy. Within two days it had collapsed, its substance shrinking with surprising suddenness.

At the time of writing, the three bracts at the base of the flower stand out stiffly around the ovary, and the stem shows some upward growth. This, and the fact that soil fauna have been noted about the flower, suggest that it may possibly set seed.

With the exception of a spirit specimen, now at the Melbourne Herbarium, and the living specimen under observation, all the material collected is in the possession of the Melbourne University.

EXCURSION TO ELTHAM

A pleasant outing was enjoyed by some 25 members who attended an excursion to Eltham on December 14, under the leadership of Mr. A. S. Chalk. The main purpose was bird-observing, and although the period was rather late for the best results a considerable number of species were found to be still breeding.

Nests seen included those of the White-naped and Yellow-faced Honey-eaters (one, in a flowering tea-tree overhanging a stream, was very pretty), the Yellow Robin, the Dusky Wood-Swallow, the Red-browed Finch, the Striated Tit, and the Weebill. Other interesting species observed included such visitors as the Sacred Kingfisher and the Rufous Song-Lark.

Mr. and Mrs. W. C. Tonge, of Eltham Heights, kindly provided afternoon tea for the party.

LIBRARY BOOKS WANTED

A recent check of books in the library of the F.N.C. reveals that many which have been borrowed by members have been held too long. Quite a number have been out for more than a year, some for an even more lengthy period. Such carelessness is unfair to the Club as a whole and to those members who have wished to borrow some of the books in question. The Committee, therefore, appeals for the immediate return of all volumes that have been held to the point of being overlooked. It will spare the trouble of writing individual letters if members who have borrowed library books will look into this matter.

PERSONAL NOTES

Mr. E. E. Pescott, a former President of the F.N.C., was in hospital for some time during December. It is pleasing to know that he has now fully recovered his health.

Mr. V. H. Miller, another ex-President, has also been in hospital again recently. We are glad to report that he is now well again.

Dr. A. B. Walkom has been appointed Director of the Australian Museum (Sydney) in succession to Dr. Charles Anderson, retired. Congratulations are tendered to Dr. Walkom, who is well known as a palaeo-botanist and as Secretary of the Linnean Society of New South Wales and the Australasian Association for the Advancement of Science.

SOME NEW SOUTH WALES ORCHID RECORDS

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

Mr. N. A. Wakefield, who is well known to readers of this journal as a keen botanical student with a special flair for Ferns, has been paying attention from his Genoa River home to the orchids of the extreme S.E. of New South Wales. We have been wanting someone to do this for a long time, and Mr. Wakefield's activities are very welcome. He has already added three orchids to those recorded in the last census (1937) for this State, *viz.*: *Diuris longifolia* R.Br., *Caladenia cardiochila* Tate, and *C. praecox* Nich. I include the last with some little misgiving, because I am aware that Mr. Nicholls himself now regards it as a variety of *C. testacea* R.Br. But orchid students cannot expect, any more than other people, invariably to see eye to eye with each other, and I plead guilty (nor am I alone) to the charge of still considering *C. praecox* a perfectly valid species.

I was very pleased indeed to learn that Mr. Wakefield had located *Diuris longifolia* over the border, for the passing years have never dimmed my love for this flower with its exquisite blend of colours. His discovery of *Caladenia cardiochila* has opened up the very interesting question of the relation of this species to Fitzgerald's *C. tessellata*; for Mr. Wakefield's Genoa River flowers strongly suggest an intermediate linking the two together. Unfortunately, owing to the severe drought, no flowers of *C. tessellata* were procurable near Sydney this year; but the character of the Genoa form of *C. cardiochila* makes it desirable to follow this matter up when opportunity allows.

In the *Australian Orchid Review* for September, 1940, an article appeared by the present writer on "The *Eucaladenias* of N.S.W." In it I expressed the opinion that the New Zealand *C. minor*, Hook. and *C. exigua*, Chees. are both forms of Robert Brown's *C. carnea*. *C. exigua* has but a single marginal callus on either side of the mid-lobe of the labellum. Mr. Wakefield reports finding, on the N.S.W. side of the border, a colony of *Caladenias* which were fairly obviously a form of *C. carnea*, having precisely this peculiar feature of the labellum of Cheeseman's little plant.

Mr. Wakefield's list of orchids in the S.E. corner of N.S.W. up to the present is as follows:

<i>Dendrobium speciosum</i> Sm.	<i>Prasophyllum patens</i> R.Br.
<i>striolatum</i> R.f.	<i>Pterostylis pedunculata</i> R.Br.
<i>Cleisostoma tridentatum</i> Ldl.	<i>parviflora</i> R.Br.
<i>Dipodium punctatum</i> R.Br.	<i>longifolia</i> R.Br.
<i>Calochilus Robertsonii</i> Bth.	<i>decurva</i> Rog.

<i>Thelymitra ixioides</i> Sw.	<i>Calceana major</i> R.Br.
<i>aristata</i> Ldl.	<i>Acianthus caudatus</i> R.Br.
<i>pauciflora</i> R.Br.	<i>exsertus</i> R.Br.
<i>carnea</i> R.Br.	<i>reniformis</i> R.Br.
<i>venosa</i> R.Br.	<i>Eriochilus cucullatus</i> R.f.
<i>Diuris maculata</i> Sm.	<i>Lyperanthus suaveolens</i> R.Br.
<i>longifolia</i> R.Br.	<i>nigricans</i> R.Br.
<i>sulphurea</i> R.Br.	<i>Chiloglottis reflexa</i> (Lab.) Chee.
<i>Cryptostylis subulata</i> R.f.	
<i>Caladenia dilatata</i> R.Br.	<i>Caladenia alba</i> R.Br.
<i>cardiochila</i> Tate	<i>caerulea</i> R.Br.
<i>carnea</i> R.Br.	<i>praecox</i> Nich.
do. var.?	

It may be of interest to state that in addition to the three mentioned above as having been added by Mr. Wakefield to our orchid census, six other orchids have been recorded in this State since the publication of "A Census of the Orchids of N.S.W., 1937" (*Proc. Linn. Soc. N.S.W.*, lxii, pts. 1-2, 1937), namely:

<i>Sarcochilus Harriganæ</i> Rupp	<i>Caladenia reticulata</i> Fitzg.
<i>Cleisostoma purpuratum</i> Rupp	<i>cordiformis</i> Rog.
<i>Diuris Colemanæ</i> Rupp	<i>iridescens</i> Rog.

Three more are awaiting the publication of the next issue of "Contributions from the National Herbarium of N.S.W." This will bring our total number up to 230.

WORK OF THE LATE W. M. BALE

By F. CHAPMAN

Long before I came to Australia Mr. Bale's name was known to me as a world-wide authority on the group of the Hydrozoa, as well as locally on the Diatomaceae. He had been a Fellow of the Royal Microscopical Society of London from the year 1882.

When I came to Melbourne I frequently met Mr. Bale at the meetings of the Royal Society of Victoria, and we often exchanged helpful notes on our respective studies.

About the year 1919 I submitted to him some well-preserved fossils which from time to time had been found in the black shales of Monegeeta, near Romsey. After a careful comparison with many living forms, we came to the conclusion that there was very little difference between some of these and genera now living in fairly deep water in the Great Bight. In fact, Mr. Bale remarked: "If they had been dried living forms I would have referred some of them to the genera *Lafoca* and *Cryptolaria*." Some of the fossils actually showed the wrinkled periderm, seen in living hydroids. It is almost inconceivable that during hundreds of millions of years, conditions required for these small organisms, like our sea-firs, should have remained static within a comparatively limited geographic area as Southern Australia. The exact age of these ancient sertularids has lately been determined by Dr. D. E. Thomas and myself, through the associated fossils, the trilobites, of the Heathcote area, as being low in the Middle Cambrian Series.

BIRDS AS PLANT DISTRIBUTORS

Bearing upon notes on the Painted Honeyeater and mistletoe, in the December issue of the *Naturalist*, G.F.H. (an aviculturist of experience) writes as follows in relation to another species of similar feeding-habits, the Mistletoe-bird (*Dicaeum*):

I have kept Mistletoe-birds in my aviaries from time to time during many years, and there is no species that I like better. The only annoying point is that during the mating season the caged birds call wild birds down, with the result that the fruit trees become covered with mistletoe. In freedom, the mistletoe berries are undoubtedly their staple food, with insects during the breeding season. In summer-time, when mistletoe berries are scarce, these birds will eat apricots, pears, or persimmons. I have two large mistletoe bushes attached to a small wattle-tree in my garden, and at arm's length have watched the way the birds were eating.

They are certainly very particular in their choice of berries. Quite a number are tapped first with the bill before they find one to possess the right consistency—not too young and not too ripe. For some time the berry is squeezed between the mandibles, and is then swallowed whole. Of course, there is very little flesh on the mistletoe berry. It is really skin and kernel, and that part of the skin which is digested is evidently at the same time turned into a white, glutinous substance. When the stone is passed by the bird, it is encased in this glutinous substance, which seems to hold the kernel fast to the branch on which it is dropped; drying is almost instantaneous. But nature makes doubly sure that its work shall be done well, and causes the bird, as soon as the stone is dropped, to hop along the branch about three inches jerking out more of this glue, which then acts as a safeguard in holding the mistletoe kernel in place.

Now, the remarkable thing is this—that when the young mistletoe shoots out its first root, this root runs along on top of the gluey substance ejected by the bird, for the primary purpose of holding the seed to the branch. The tap-root does not enter the branch of the tree to its centre, thereby causing a big swelling to appear, until a later period. No mistletoe will hurt a gum tree, no matter how many are on one tree, for the reason that it is indigenous to it.* But the parasitic plant will certainly kill the branch of a fruit tree, or the whole of it, either by strangulation or by sucking its sap. Once growing, the mistletoe parasite is exceptionally hard to eradicate from a fruit tree, unless taken at a very early stage, for the roots seem to run below the bark and throw out plants at any point.

It is a remarkable thing that the mistletoe kernel will grow only

*Do botanists agree with this statement?—Editor.

where the bird has deposited it. I have experimented for many years trying to put mistletoe kernels, the moment I saw them deposited, on another branch of the same tree, and on branches on trees close by, but I have never been able to cause one of those transplanted seeds to germinate.

A STRANGE MESSENGER

While renovating an old exhibit of sea-birds in the Australian Museum (Sydney) Mr. Henry Grant, taxidermist, came upon a clipping from the *Queenslander* (Brisbane) of October 15, 1887. The scrap of paper formed portion of the filling of some false rock-work on which the birds were standing and the story it told was as follows:—

The finding of a remarkable message from the sea, in the shape of a band fastened round the neck of an albatross, is thus reported in the *West Australian* of September 21:—

"It often happens that strange messages reach land from people in distress at sea, but none could be more extraordinary than that which reached the shore of this colony on Sunday. A boy in the employment of Mr. V. E. Nesbit, of Hay Street, Perth, saw a dead albatross lying on the beach of North Fremantle. On going up to it he observed that the bird had only recently expired, the body was still warm. He also noticed that round its neck was fastened a tin band, a little more than 2 in. wide. Taking off the band he found that it was covered with letters punctured into the tin. Being unable to make anything out of the inscription, he took the band to his employer yesterday morning. Mr. Nesbit at once saw the importance of this message from the sea, and took it to the office of the Colonial Secretary in the hope that the Government might take action in the matter. The message on the band is as follows:—'13 naufrages sont refugees sur les iles Crozet, 4 Aout, 1887.' Translated, this reads as follows:—'13 shipwrecked sailors have taken refuge on the island Crozet, 4th August, 1887.' . . . The Crozet Islands are a volcanic group in the south of the Indian Ocean, and about 1,500 miles to the south-east of the Cape of Good Hope. The albatross, probably impelled by fear created by the tin band, must have travelled on and on until it dropped dead on the North Beach, a point over 3,500 miles from the Crozet Islands. The Government, we understand, cabled to England the contents of the albatross's message."

In a subsequent issue of the same paper a correspondent writes on the subject as follows:—

"Everyone must have been astonished at the extraordinary incident of the albatross found on the North Beach carrying its message from the sea. Perhaps the most remarkable part of the incident is the question—what could have induced the bird to leave its haunts and fly 4,000 miles straight away? This must have been the first thought of many. An interview with the discoverer of the bird, however, sets the question at rest. Upon being asked if the tin band was fixed tightly on the neck, he said, 'Not very; it was low down and the feathers were rusted; but I found a broken shell with the fish in it in the bird's throat above the band.' Here then appears to be the secret. This shell was probably taken by the bird from its haunts at the Crozet Islands, and being unable to swallow it, discomfort and pain caused it to wander—as is usual with all animal life—until it reached our shores. It may be safely assumed that had the band of tin caused no obstruction, the bird might have carried the message round its neck in the Southern Ocean for the next half-century or more."*

*This strange incident is quoted by Mr. Wm. Beebe in his book *The Arcturus Adventure* (pp. 102-103).—Editor.

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EXCURSION

MONDAY, JANUARY 27 (Foundation Day).—Whole or half day. Kallista.
Object: Ferns and forest plants. Leader:—A. J. Swaby. Consult
special holiday time-table for first train after 8.30 a.m. or after noon,
connecting with Monbulk 'bus at Upper Ferntree Gully. Alight at first
picnic ground, Kallista. Take lunch, afternoon tea, rough shoes. Cases
may be left at kiosk. Morning: Life history and recognition of ferns.
Afternoon (on arrival of first 'bus): General survey for report to
Club on preservation of area.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

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THE
Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, FEBRUARY 10, 1941

1. Minutes.
2. Subject for the Evening: "A Naturalist in the Carnarvan Ranges."
By S. R. Mitchell. Illustrated by the Epidiascope.
3. Correspondence and Reports.
4. Nominations for Membership.
5. General Business.
 - (a) Forthcoming Excursions;
 - (b) Questions by Members.
6. Nature Notes.
7. Remarks by Exhibitors.
8. Conversazione.

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PROCEEDINGS

The Monthly Meeting of the Club was held at the Club Rooms, Royal Society's Hall, on Monday, January 13, 1941. The President, Mr. L. W. Cooper, presided and about 100 members and friends attended.

The President expressed New Year's Greetings to members and welcomed back to the meetings Mrs. C. L. Barrett, who has been ill.

SUBJECT FOR THE EVENING

The subject was illustrated lectures on "Bats." Mr. P. Crosbie Morrison opened the lectures by giving a short account of the group and their position in the animal kingdom. He mentioned that little is known about the Australian species.

Mr. C. L. Barrett then gave an account of his experiences "bat hunting" in various places and illustrated his remarks by a series of photographs taken in various parts of Australia and elsewhere.

Mr. Morrison showed motion pictures, taken by himself, first of a small bat rising to flight from a flat surface, an act which was thought impossible; and then of the actions of a "flying fox" in eating fruit, making his toilet after eating, preparations for sleep, etc. This specimen was captured in Melbourne and is now at the Badger Creek Sanctuary.

Many questions were asked the lecturers and a number of comments made by the members, and at the close of these the President expressed the thanks of the Club to Mr. Morrison and Mr. Barrett.

ELECTION OF MEMBERS

On a show of hands the following were duly elected as Associate Members of the Club:—Mr. D. F. Hall and Mr. R. M. Withers.

NATURE NOTES.

Mr. Morrison showed a natural colour film of various scenes in the Grampians, around the coast near Pt. Campbell, and of the lakes at Kerang. Some views of the Badger Creek Sanctuary also were of interest. Mr. Morrison was congratulated on his success with these films.

MAR 24 1941

EXHIBITS

By Miss C. C. Currie (country member):—Garden-grown plants as under: *Epacris longiflora*, *Banksia serrata*, *B. marginata*, *Leptospermum scoparium*, *Eucalyptus* sp. *Sterculia* sp.

By Mr. A. H. Mattingley:—Aboriginal grooving stone tool for fluting boomerangs.

By Mr. C. French:—Head of introduced trout, showing deformity which has given rise to the names "pug-headed" or "bull-dog-nosed trout." (The condition is of rare occurrence). Specimen from Eildon Weir. Garden-grown specimens of *Melaleuca nesophila* and *Baeckia virgata*. Specimens of Lady's Tresses Orchids (*Spiranthes australis*) from Yarra Junction.

By Mr. S. R. Mitchell:—Ground-edged axe-head and hammer-stones from the Endeavour River, Qld., found within two miles of the spot where Capt. Cook landed in 1770. Muscovite Mica from a new field some 200 miles from Cooktown, Qld.

By Mr. R. G. Painter.—Garden-grown plants as follows: *Melaleuca hypericifolia*, *M. lateriflora*, *M. nesophila*, *M. Huegellii*, *Calothamnus Gillieni*, *Humea elegans*, *Isotoma petrarca*, *Swinsona galegifolia*, *Pimelea decussata*, *Viola hederacea*, *Eucalyptus nutans*.

F.N.C. FINANCE AND MEMBERSHIP

At the request of the Committee of the F.N.C., Mr. A. S. Chalk and Mr. A. G. Hooke have examined the Club's finances and submitted a detailed report covering the last eleven years' operations.

The report shows that, as a curious fact, the peak period for receipts was in the "depression" year 1931; subscriptions then were £288 and profits from three Nature Shows (including the Jubilee Exhibition) reached the high figure of £614, of which £380 was given to the Lord Mayor's Charitable Fund. During the last five years subscriptions have attained the following figures: 1936, £246; 1937, £252; 1938, £246; 1939, £237; 1940, £251. Receipts from shows during that period have been either modest or non-existent, so that total receipts during the period have fallen considerably. For example, in 1931 the total receipts were £944 and in 1932 the amount was £521, whereas in 1939 the total was only £290 and in 1940 it was £317.

The chief expenditure incurred each year is on the production of the *Victorian Naturalist*. The highest cost was in 1934, when the figure reached was £390—£25 above the subscriptions. The lowest cost for the period was in 1937, the figure then being £215. In 1940 (to April 30) the cost for the year was £222—£29 below the subscriptions. The total expenditure last year was £281, and the total receipts were £317.

It becomes clear that although the Club is living within its income, its finances need careful safeguarding, particularly in the absence of receipts from shows. The Committee invites members to assist in this respect by introducing new members. If it was possible to attain a membership yielding £288 in the "depression" year 1931, it should be possible to improve now upon the £251 of last year.—A.H.C.

MISTLETOE FRUITS AND BIRDS

By T. S. HART, Croydon, Victoria

The account of the Painted Honeyeater in Mr. A. H. Chisholm's recent article suggests some observations on Mistletoes, in relation to the bird's food supply. The great diversity in the season and in the duration of the flowering of the different species will no doubt make fruit available over a long period.

Almost all the Victorian localities quoted for these birds are within the known range of the Mistletoe *Loranthus Miquelii*, but this may only mean that in Victoria they penetrate into the kind of country favoured by this Mistletoe. As this is the most widespread of all the Australian Mistletoes, being found in all the mainland States, and in the Northern Territory, it will afford berries with which they are familiar elsewhere.

Among its host plants are *Eucalyptus bicolor*, *polyanthemos*, *meliiodora*, *Bosistoana*, *albens* and the tree of the Grey Box group found at Melton; also several Mallees and *Eucalyptus rostrata*, *tereticornis* and *sideroxylon*. In older observations it has been merged in *L. pendulus*, from which it is readily distinguished by its bright twigs, and by stalks to practically all the flowers. The anthers separate it from *Phrygilanthus*.

L. Miquelii is common at Eltham and occurs at Christmas Hills. Thence it comes south of the Yarra on the spurs carrying Red Box near Wonga Park, but does not extend to Croydon, where Yellow Box is present, but the forest is not what one would call Box Forest. Nor is it observed at Ferntree Gully, nor at Frankston, where *L. pendulus*, on the other hand, is abundant. *L. Miquelii* occurs at Melton; it is definitely recorded at Bendigo, Wycheproof, Sea Lake and Mildura.

My notes south of Talbot were made before the distinctness of *L. Miquelii* was known to me, but the Box-Ironbark Forest favours *L. Miquelii* and I have a note made in 1915 "much Mistletoe since entering the Ironbark country" near the road from Clunes to Talbot. As to Edenhope, I have found practically no information except that good Redgum is north of the Glenelg. At Bairnsdale *L. Miquelii* begins to flower in February, continuing in the months following. Fruit has been noted at the end of September. At Eltham in October, 1931, I noted "a few mature fruit and some immature; most of the plants seem to have no fruit," which would be unlikely if birds were eating them freely. Abundant fruits were found near Melton, on one plant only, as late as December 31, 1932.

L. Miquelii then can supply fruit in spring, perhaps especially if the flowering is not quite so early as at Bairnsdale, where the

summer is moister. Zimmer observed at Mildura that this Mistletoe was still in flower in July, 1933, on *E. oleosa*, but over on *E. bicolor*.

Loranthus pendulus occurs also at Eltham, and no doubt would provide some fruit in spring as it may be found in flower in June. It has either a long or a double-flowering season and is now (December) in flower at Croydon. It is very common near Ferntree Gully, and at Frankston, the more or less rusty looking twigs differing from the bright ones of *L. Miquelii* and the central flower of a group stalkless. Very likely the type of forest of these localities would be less attractive to birds of the inner country.

Loranthus Exocarpi, the Harlequin Mistletoe, is recorded by Black as flowering from March to June in South Australia, and Ewart gives also November, agreeing with a note of mine "many unripe fruit" at Parwan, February 2, 1932. It is plentiful at Station Peak and could be found not long ago near Laverton. The autumn and winter flowers should supply fruit in spring. It is a widespread species. Mildura is among the Victorian localities for it.

Loranthus quandang, the Grey Mistletoe, is also credited with a long flowering season. Flowers were seen by me late in the year at Yarra Glen and near Healesville.

The illustration in the December *Naturalist* seems to show one of the Mistletoes with needle leaves. I have had flowers of the true *L. linophyllus* in February and *L. Preissii*, a more slender species formerly confused with *L. linophyllus*, is given by Black as flowering most of the year. It is quite likely, however, that the species in the photograph is neither of these, but some other which does not reach Victoria.

Phrygilanthus eucalyptifolius, called Common Mistletoe about Melbourne, occurs at Melton and Eltham, as well as south and east of Melbourne, but it is doubtful whether it extends into the typical north-west of Victoria, and it is not recorded for South Australia. It shows a well marked seasonal behaviour near Melbourne, with new shoots in spring on which buds soon appear, the flowers opening about the middle of December and later. I have records of fruit in May at Bairnsdale, in April at Bylands, near Kilmore, and "some ripe fruit, mostly fallen" at Cheltenham, July 11, 1938. These dates seem typical, and unless the flowering season differs elsewhere, it will be of no importance for food in spring. It would, however, be useful to the *Dicaeum* in winter and fits with the statement that this bird left Gardiner's Creek about August and nested elsewhere. Brittlebank, however, records it as nesting in his district, including "Melton westward

to the Moorabool," in which *L. Exocarpi* is frequent, and *L. Miquelii* in part at least.

True *P. celastroides*, an East Gippsland coastal form, scarcely affects the present question, but the hosts and Frankston locality under this name in Ewart's Flora belong to *P. eucalyptifolius*. In my report of the Langwarrin Excursion in 1917, I, like others at that time, used *Loranthus celastroides* in a comprehensive sense to include both forms. The misplacement of particulars of *L. Preissii* and *L. Miquelii* in the Census 2nd Edition also affects the localities in the Flora.

NOTES ON BATS

(Resume of remarks at the January meeting)

Bats, as a subject of study by naturalists, still suffer from the stigma that attached to them in the dark ages. They are nocturnal creatures, retiring for their daylight sleep to sequestered shelters. In Europe they found the necessary shelter principally in the belfries of churches and in the tombs of the old churchyards. Being seen only at night, they were immediately associated with the dead, as "black angels." Thence the convention of representing the powers of darkness with bats' wings, as distinct from the dove-winged angels.

Yet the bats, large and small, are full of interest, and their intelligence justifies their classification by Linnaeus in the highest mammalian order, Primates. They have since been reconstituted as a separate order, Chiroptera, placed immediately below the primates in taxonomic precedence.

Bats fall naturally into two groups—insectivorous (including the carnivorous vampires), Microchiroptera, which are generally small, and the large fruit-eating forms, Megachiroptera, known generally as "flying foxes."

I had the good fortune to have one of these for some time under observation in a large aviary. Its features were sharp and alert, and it was quick to learn that the approach of a human being meant food, and not danger. Very soon, it would accept an apple out of my hand, and some of the motion picture film shown at the meeting (the first, as far as I can ascertain, taken of this creature at close quarters and intimately) showed the remarkable manner in which it manipulated the apple with the thumbs of the wings and one hind foot, while hanging suspended from the roof of the aviary with the remaining foot.

Of even greater interest, however, were first the nervous twitching of the ears as an indication of uneasiness (inspired in this instance by the whirring of the cine camera), and the curious method of settling for sleep. Hanging head downwards from its roost, the animal first tucks one hind leg close in to the body, then throws one wing round itself and tucks its head close to the chest, and finally throws the other wing right round all as an outer wrapping, with all the abandon of a Spanish beauty throwing her shawl over her shoulder. And finally, the muscles of the leg are used to rotate the ankle of the leg by which it is suspended. The foot, of course, remains firm on the support, and the whole body rotates through an angle of about 180 degrees. As the head is covered during this manoeuvre, the possibility of this being a last look round before going to sleep (as in the case of the dog curling up for rest) is ruled out, and the only conclusion I can come to is that the creature is actually rocking itself to sleep. Incidentally, the claws of the hind foot are so fashioned that they will hang firmly without the exertion of any muscular effort on the part of the bat—a dead bat will hang just as securely as a live one.—CROSBIE MORRISON.

AUSTRALIAN SEA-HARES AND TAILED SEA-SLUGS

By JOYCE ALLAN, Australian Museum, Sydney

Sea-hares and tailed sea-slugs are two groups of marine animals belonging to the *Opisthobranchia*, a sub-class of the sea-shells. Their shell disappears by gradual changes, becoming more enveloped in the fleshy folds of the animal's body as its usefulness diminishes, until in some it disappears altogether and the animals become shell-less. They have a wide distribution in tropical and sub-tropical waters, and are abundant in the Indo-Pacific, where they mainly inhabit the shallow shore-line. Many interesting species of sea-hares and tailed sea-slugs are found round the Australian coast, and a general account of some of these follows.

Tailed sea-slugs

Only a few species of these have so far been found in Australian waters. They are soft fleshy animals, with wide swimming flaps on the sides of the body, and the largest are about two inches long. Their head is blunt, and the body divided by a furrow into two parts, the posterior of which is protracted into two tail-like projections of varying lengths. An internal shell lies under the skin near the commencement of the tails, and the breathing gill is nearby on the right side.

These graceful, often brilliantly marked creatures live on weeds or under stones in rock pools. where at low tide they can be seen either swimming actively, or crawling along leisurely, dragging their tails behind. The three species figured here, *Chelidonura adamsi*, *Aglaja taronga* and *Aglaja sanguinea*, are found in Sydney Harbour. *Chelidonura adamsi* is black, bordered with lines of brilliant blue and parallel lines of gold; *Aglaja taronga* is velvety brown with yellow and white lines; and *Aglaja sanguinea* is black with blood red spots.

It is quite possible that there is a number of undescribed species of tailed sea-slugs living in our waters which have not yet been found. One such species, in fact, has been collected recently in New South Wales.

Sea-hares

Sea-hares are very common along the Australian coast, where adults appear in numbers during the spring and summer months to lay their eggs in the shallow water. Their grotesque shape, slimy body, and power to emit a purplish fluid which discolours anything it touches, often repulse collectors, who fear they may be harmful. These fears, however, are groundless, and in some islands of the Pacific, they are even eaten alive by natives.

Though sea-hares have been observed eating their own and

other shellfish eggs in captivity, they are as a rule vegetable feeders, and for that reason are found most abundantly where the short weed growths are thickest. Just as quickly as numbers of them appear in rock pools and on sandy mud flats, with their eggs alongside them, so they disappear again, leaving the eggs to await whatever fate befalls them.

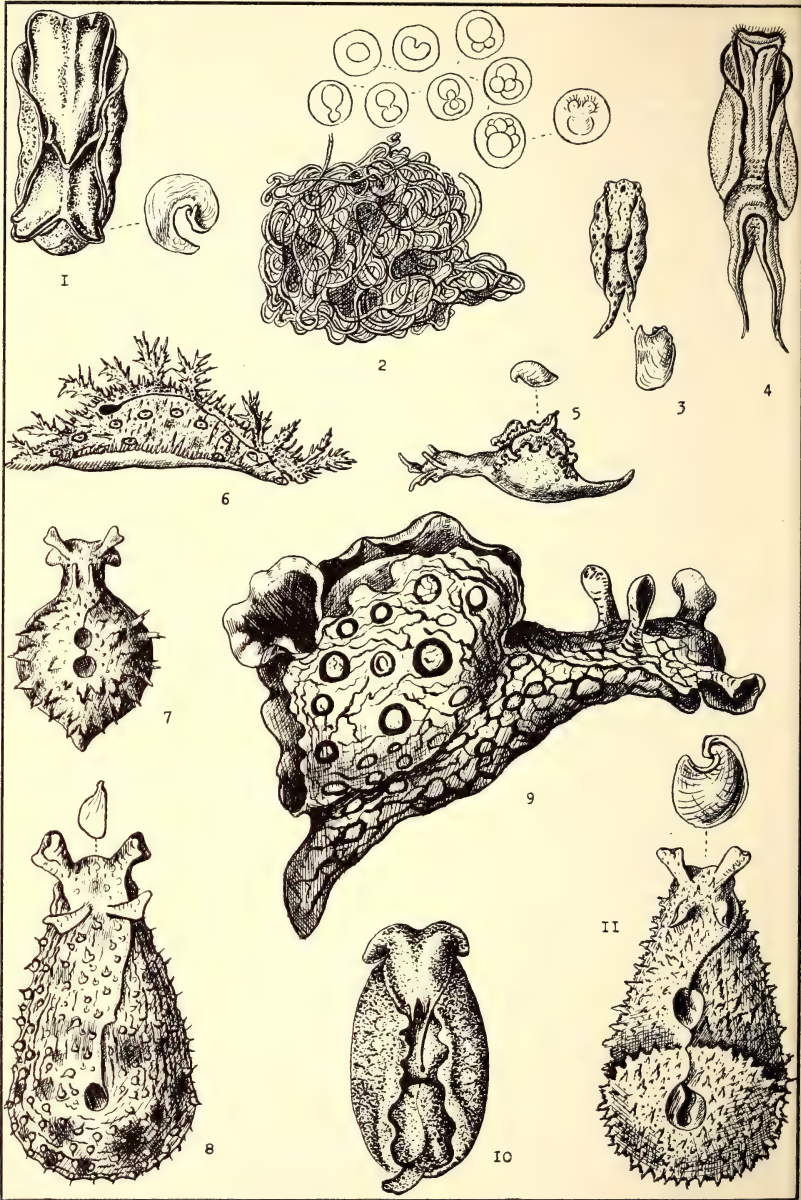
Both male and female reproductive organs occur in the one individual, and every normal sea-hare under favourable conditions produces fertilized eggs. These are laid in string-like masses, resembling spaghetti, varying in colour from cream to green, sometimes red, and the ova in a girdle number many thousands. A mass untangled, may measure twenty-four yards or more. When it is considered that every inch of that few millimetre wide string contains numerous microscopic eggs, then some idea can be gathered of the vast number in a complete mass. It will repay a collector to examine portion of a sea-hare egg-string under a lens. Inside the string are seen the tiny ova, and if these be in the process of developing, the various stages can be followed, as development is fairly rapid.

Segmentation of the fertilized ova can be noticed as early as twenty-four hours after the eggs have been laid, and in less than a week in some cases, the young larvæ have emerged altogether from the string and are ready to take their place in the marine world where, beset with many dangers, only a small percentage survive to reach maturity. Though all sea-hares in their larval stage possess a shell, this is discarded by certain species very early in life.

Young sea-hares, delicate pieces of jelly, are often noticed in considerable numbers trying out their crawling and swimming powers amongst weeds in rock pools, and are really most attractive little creatures. They even send out, when disturbed, tiny jets of purple fluid.

Sea-hares can be divided into two groups, swimmers and non-swimmers. The swimming species have large body flaps, or *pleuropodial lobes*, placed one on each side of the body. These part and come together constantly, and the graceful movement enables the animal to swim. As the lobes part, the feathery breathing gill is exposed on the right hand side of a fleshy fold of skin, the *mantle*, under which lies the thin, internal shell.

The common swimming sea-hares of Australia are *Tethys angasi*, which reaches twelve inches in length and has conspicuous black rings on its body; a large black species, *Tethys hyalina*, and an even larger, chocolate brown and white one, *Tethys extraordinaria*, which frequently swims in quite deep water. There are also several greenish-brown species about six inches long, which are found in Australia. These are classified mainly by



For Key see Page 182.

their shells, and the two best known ones are *Tethys sydneyensis* and *Tethys sowerbyi*. The smallest swimmer is *Tethys norfolkensis*, a reddish-brown species about two inches long, which adapts its colouring to suit the various shades of kelp weed over which it crawls. It is very common in New South Wales and allied forms of it occur in Norfolk and Lord Howe Islands.

Amongst non-swimming sea-hares, we find those whose bodies are heavily ornamented with warty protuberances or branching growths. The absence of swimming lobes is compensated for by a broad crawling foot, which is the animal's chief means of locomotion. Compared with the former group, the non-swimmers are extremely sluggish, moving slowly, but more often resting for long periods on weeds in rock pools, or sunk in sandy mud on tidal flats. At times, only a sudden stream of purple fluid staining the water or sand, signifies their nearby presence.

The largest non-swimmer is *Dolabella scapula*, an extremely heavy, repulsive-looking sea-hare, over twelve inches long, which is common throughout the Indo-Pacific and has a New South Wales representative, *Dolabella andersoni*. This species browses over the short weed growth, or sinks below the sand, leaving only the small opening where the short body flaps unite, exposed to the water.

The southern species is common at Port Hacking and Sydney Harbour, New South Wales. At times, a caterpillar-like train of them can be seen crawling over the sand in a foot or so of water, the head of one touching the tail of another. The typical rocky shore non-swimming sea-hare of the Indo-Pacific and Australia is *Dolabrifera brazieri*, a greenish-brown mottled species, about four inches long, with large warts bearing white filaments scattered over its body. During spring and summer months at low tide, these are found flattened firmly by their broad slimy foot to most rocks overturned. The filaments and warts, as well as their head tentacles, are slowly retracted if the creature is touched.

The prettiest non-swimmer is *Ramosaclesia rex*, a greenish New South Wales species with rows of bright peacock-blue spots encircled with black, and yellow branched body appendages. Two other interesting sea-hares are a small, very active, yellow one, *Notarchus petaurista*, which has a long narrow foot for clinging round stems and weeds, and a peculiar species from eastern Australia, *Paraplysia piperita*. These are both rare round Sydney, but the latter is fairly common in southern Queensland. It is dark greenish-grey, with black speckling, and the hind pair of tentacles is placed right back between the origin of the short body lobes, unlike other species.

As it is possible here to mention only a few of the known species of Australian sea-hares, representatives of each type have been selected. It is hoped that these will assist collectors in recognizing these extraordinary members of the shell phylum when they encounter them along the seashore, and encourage them to search for other species.

EXPLANATION OF ILLUSTRATION (Page 180)

- Fig. 1.—*Aglaja taronga*, with internal shell.
 Fig. 2.—Egg strings of a sea-hare, and stages in the development of a fertilized egg.
 Fig. 3.—*Aglaja sanguinea*, with internal shell.
 Fig. 4.—*Chelidonura adamsi*.
 Fig. 5.—*Tethys norfolkensis*, with internal shell.
 Fig. 6.—*Ramosaclesia rex*.
 Fig. 7.—*Notarchus petaurista*.
 Fig. 8.—*Dolabrifera brazieri*, with internal shell.
 Fig. 9.—*Tethys angasi*.
 Fig. 10.—*Paraplysia piperita*.
 Fig. 11.—*Dolabella andersoni*, with internal shell.

BIRDS AND AIR RAIDS

The following letter appeared in the London *Spectator* during November, 1940:

During a recent air-raid on the east coast of Scotland a flock of black-headed gulls displayed something akin to mass hysteria when a nearby anti-aircraft battery suddenly opened fire in the early hours of the morning. With one accord the whole colony of several hundred rose into the air in a flurry of startled cries and flapping wings. For nearly an hour afterwards they circled round and round before once more resuming their habitual position in the field that they have made their winter quarters. The smaller wild birds contented themselves in uttering subdued twitterings from their perches in the trees and hedgerows. On the other hand, an owl which has taken up residence in the locality adopted an attitude of defiance. This bird, probably a tawny owl, gave vent to its feelings during some unusually intense gunfire by a paroxysm of indignant screeches of a most belligerent tenor. He left no doubt that he resented this unseemly incursion upon the progress of his night-work.

Mice are generally regarded as being extremely sensitive to loud noises. However, during one raid the writer had occasion to enter another room in the house, and in doing so startled a mouse which had been foraging, unperturbed by the "noises off." Perhaps even mice become conditioned to the amenities of twentieth-century civilization.—Yours etc.,

H. BARRACLOUGH FELL.

Department of Zoology, University of Edinburgh.

NESTING HABITS OF THE SUPERB LYRE-BIRD

By K. A. HINDWOOD, Sydney, New South Wales

Much has been written about the habits of the Lyre-bird and there can be small doubt that it is one of the most widely known of Australian birds. Its image has been captured on films and appears on postage stamps; its wonderful mimicry has been broadcast from the living bird in nature and from sound film and gramophone record. Many enthusiastic field naturalists have recorded their observations in scientific journals and elsewhere, yet, from a study of this extensive literature, it is apparent that there are many points, particularly in relation to the nesting habits of the species, worthy of closer investigation. The main purpose of the following notes is to draw attention to these matters.

Superb Lyre-birds occur in Australia from the Stanthorpe district in Queensland (south of Brisbane) to the Dandenong Ranges in Victoria (near Melbourne). In this area they frequent the slopes of the Great Dividing Range and contiguous parts, occurring chiefly between the mountains and the sea coast—that is, the eastern side of the Divide—wherever suitable habitats are to be found. Two species are recognized: the Albert Lyre-bird, restricted to S.E. Queensland and N.E. New South Wales, and the Superb Lyre-bird of a much wider distribution, a distribution which overlaps that of its less conspicuous and little known relative. The Superb Lyre-bird still frequents undisturbed gullies within a few miles of Sydney, and also occurs fairly close to Melbourne.

Winter nesting:

The nesting of the Lyre-bird takes places during the coldest months of the year, the majority of eggs being laid in July and August; the earlier young appear towards the end of July, from eggs laid early in June, but most eggs hatch during August and September. The young remain in the nest for at least five weeks, often for a much longer period. Excluding the slightly earlier hatching dates for some New South Wales eggs, it will be seen that nestlings are in the nest from August to mid-October, really the spring months, though spring does not officially begin until September. Until evidence to the contrary is advanced, it must be assumed that this is the season when the most plentiful supply of food is available. No actual research appears to have been carried out in regard to the food content of the soil at this time of the year. The matter has been discussed by S. W. Jackson (1) in these words:—

As the *Menura* is a non-migrant, it is difficult to assign a reason for the choice of the cold season for . . . courtship and house keeping, save, perhaps, that as his [her] food is procured chiefly from the ground, his instinct leads him [her] to arrange that the greatest call for it shall come when the soil and its carpet of dead leaves are not only moist with the winter rains, but teeming with worms, pupa and larvæ.

Most nests of Lyre-birds are built on the ground or near it on rock ledges or on suitable positions in caves, though occasionally nests are built in trees up to sixty feet or more from the ground.

Period of nidification:

The female alone constructs the nest and this takes, according to Tregellas (2) about a month to complete. A. J. Campbell records (3) an instance in Victoria where the nest was ready for the egg some forty days after its commencement. Spencer Roberts (4) writing of the Queensland form, states "about two months." E. L. Bradford (5) observed the construction of a nest near Sydney which was completed in approximately twenty-one days after the first sticks were laid. Perhaps the time given by Tregellas, that is, about one month, would fit the majority of cases.

Period of incubation:

Observations on the period of incubation vary considerably. Sometimes the egg is laid a week or more before it is sat upon (6) therefore daily observations on a nest would be necessary to ascertain when incubation actually commenced. I know of no instance where this has been done. The following notes refer to the length of time from the laying of the egg until the time of hatching; they do not necessarily represent the actual period of incubation:—"Between five and six weeks occasionally, exactly six weeks in several instances (R. T. Littlejohns *in litt.*). Seven weeks (5), eight weeks and one day (7). Seven weeks and one day* (7). Seven weeks and one day* (3, p. 518). Eight weeks at least (A. H. Chisholm, *in litt.*). This last instance was at Mount Buffalo, Victoria, in country then under snow.

My own observations on a number of nests in the neighbourhood of Sydney indicate that the incubation period in that locality is about six weeks, though in no instance was the actual date of laying or the commencement of incubation ascertained.

It is well known that the female will leave the egg, sometimes

*Both Campbell (1901) and Hall (1907) quote these incubation periods on the authority of I. W. De Lany. Campbell gives the date of laying and date of hatching, whereas Hall states: "Mr. De Lany . . . tells me the period of incubation of one egg noticed by him was eight weeks and one day." It is possible that the time quoted by Hall is an error and that seven weeks and one day is correct.

PLATE XIX



Unusual Nesting Place of Lyre-bird, National Park, N.S.W., June, 1932.

Photo: K. A. Hindwood.

for a whole day, to feed, being under the necessity of foraging for herself. When this happens the egg becomes quite cold. In snow country, or in other areas where the climate is rigorous, it may be presumed that food is more difficult to obtain and that the female would be off the nest more frequently. This fact, coupled with the lower atmospheric temperature, may account for the considerably longer incubation period (at least eight weeks in one instance) in such localities than in somewhat warmer areas, or lowlands. I have known an egg to be cold within a few days of hatching. Such a condition no doubt slows down the process of incubation, but it has no apparent effect on the ultimate growth of the embryo. Nor is the condition confined to Lyre-birds; Seton Gordon records (8) an instance in which the eggs of a Greenshank in snow country were cold, covered with raindrops and apparently deserted, but which eventually hatched.

Number of eggs laid:

Normally only one egg is laid in a season. However, there are instances on record of two eggs in the one nest, or a second egg being laid in the same nest after the first egg has been taken. A. J. Campbell states: (3, p. 520):—

In the course of Mr. Chandler's long experience in the wilds of Gippsland, he has found nests containing a pair of eggs, notably on the 24th of July one season, when he found two nests with each a pair of precious eggs, one lot was fresh, the other slightly incubated. Mr. Chandler kindly presented me with a pair . . . which were as alike as two peas . . . but they were slightly smaller in their dimensions than the average size.

Mr. Le Souëf has also found a nest containing a doublet. It was on the 25th August, 1893. Both were fresh but one was slightly larger and lighter than the other.

A further record was published by L. C. Cook (9) who had the information from a Mr. Freeman, who supposed that the second egg was laid by another female. Where the eggs differ in size and coloration, and the eggs of individual Lyre-birds differ considerably in this respect, it seems probable that two birds have used the one nest. Where the eggs are similar it seems that the one bird has laid both eggs. J. A. Leach (10) remarks that three eggs have been found in a nest, but he does not give any authority for the record.

Sometimes when the first egg has been removed from a nest a second egg will be laid in the same nest. On July 12, 1916, A. C. Stone took a partly incubated egg from a nest in South Gippsland; on August 9, 1916, " . . . it contained another egg laid by the same bird, identical in shape and colour with the first egg, but covered over nearly the whole surface with small limy excretions. Incubation 4/10. (This indicates that the second

egg was laid within a fortnight of the removal of the first egg.) The shells of both these eggs were so porous that during the process of blowing, beads of water exuded over the whole surface as though the eggs had been left out on a dewy night." (11.)

Period of young in nest:

The situation of the nest has a considerable bearing on the time the young bird remains in the nest. Tregellis states (6) that a nest on the ground is vacant in five weeks' time while a nest sixty feet from the ground will be still occupied two months after the young has hatched. Ramsay (12) remarks that the young stay in the nest until they are eight or ten weeks old, a statement repeated by Jackson (1, p. 129); neither author gives any actual instances in support of his statement. Ramsay's remarks being based on the observations of his collector, Braisher. Sharland (13) gives an instance where the young bird remained in the nest for approximately one month. My own observations on nests near Sydney built on or close to the ground indicate that the period in this locality is about five weeks or a little longer. In localities where food is plentiful, it may be assumed that the growth of the young bird would be more rapid.

Feathers in nest lining:

As soon as the egg is laid the female plucks the soft downy feathers from her *flanks* and places them under and around the egg. After a few days they are in sufficient number to conceal it. The presence of only a few feathers is a good indication that the egg has only recently been laid. These feathers are from 4½ in. to 6 in. in length, and, because of their softness, they no doubt help to retain a certain amount of warmth in the egg when the female is not sitting.

Male on or near nest:

Le Souëf (14) gives an instance of a male bird brooding and quotes hearsay evidence of other occurrences. "On August 28 (1902), when in a fern gully at Gembrook, I found the nest of a Lyre-bird (*Menura victoriæ*) in the steep bank of a creek, and a male bird was sitting on the egg, the hen bird being nowhere in sight; and on two other occasions this season I have heard of male birds being disturbed off the nest. In most of the nests I have before found it was a female sitting but we now see that both parents assist in the incubation."

No other observer has recorded a male bird brooding, though on a few occasions males have been seen near occupied nests. In discussing such an instance, A. H. Chisholm remarks:

This was the first time I had ever seen a male Lyre-bird anywhere near a nest, and I know of no other instance in affinity. It seemed fairly clear that the bird knew where the nest was, but whether he knew that a babe was present is another matter. I imagine that his arrival was fortuitous—he chanced to be in the vicinity when the female screamed, and he strolled along in a spirit of enquiry, because (with the approach of the spring moult) his passion for display was abating. At any rate, when we disturbed the female again later and caused her to scream, there was no response from his lordship.

Tregellas (2), after more than twenty years of observation on the habits of Lyre-birds, was unable to record a male bird incubating, and states: "He rarely ventures near the sitting hen."

Disposal of Fæces:

The removal of the excreta from the nest is an important matter, as it is with the majority of birds that feed their young on insects. If the fæces were not removed the nest would soon become fouled, and in the case of the Lyre-bird, where the chick remains in the nest for a long period, conditions would be intolerable and would be such as to attract injurious organisms, particularly the larvæ of flies. It should be stated that the excreta is never actually deposited in the nest but is taken by the female as it is voided. Where nests are near water the adult will deposit the fæces therein, generally in the same spot each time. Presumably the object of dropping the fæces in water is not to conceal it, but rather that the adult bird may clean her bill.

The subject has been discussed by Thompson (16), who states that an examination of the fæcal vesicle of the young Lyre-bird "showed that it not only represents a special adaption for removal by the parent bird but that it provides a means for storing the fæcal matter over the comparatively lengthy period during which the adult may be absent in search of food. The fæcal mass was two inches in length contained in a white, opaque, mucilaginous investment, which surrounds a central mass of fæces. This central mass was spirally coiled and was held in a mucilaginous matrix, and must have represented the contents of the bowel for a distance of more than 12 inches."

Use of old nests:

Various opinions have been expressed on the use of old nests. Campbell (3, p. 518) remarks: "I can find no evidence of Lyre-birds reconstructing their old nests as mentioned by one writer (? Ramsay, *vide infra*), although the birds may rebuild upon an old home, but in rare instances, when an egg has been robbed, another egg is found in the same nest." Almost the opposite view is taken by Jackson (1, p. 133), who states: "I have frequently noticed that these birds re-build their old nests year after year if they have not been tampered with or previously robbed."

With the majority of nests, the hood or cowlings usually drops or becomes disarranged before the next nesting season, though the substantial cradle of sticks may remain in position for some years. Not infrequently these old nests are used as the basis of a new nest. Spencer Roberts (4, p. 245) gives instances of new nests built on old structures after intervals of two years. Tregellas (2) found a nest built where an earlier nest decayed five years previously. Ramsay observes (12, p. 51) that "occasionally the same nest is used more than once, often being lined afresh with feathers."

The following instances of the use of old nests have come under my notice: At Middle Harbour, Sydney, on June 24, 1938, a bird was flushed from a nest; it then contained an egg and the young bird eventually left safely. The following year this nest, which was in much the same condition as when it was previously used, contained a cold egg on May 28, 1939. Nothing had been added to the outside of the nest but fresh material had been placed in the nesting chamber. It may be assumed that the early date of this egg can be attributed to the fact that the female was not under the necessity of spending several weeks in building a new nest. At the time the egg apparently had not been sat upon and the bird was nowhere to be seen. Unfortunately the egg disappeared from the nest several days later.

On May 26, 1934, I found a nest with fresh feathers in the lining, and containing a cold egg, at Lovett's Bay, Kuringai Chase, north of Sydney. This is the earliest recorded date for a Lyre-bird's egg. Outwardly the nest was old, with fresh bracken growing through and about the outer structure; it certainly had not been built in 1934. Like the other instance quoted above, the female, not being obliged to build, had laid early, though incubation may not have commenced for a week or more after laying.

In July, 1937, a nest, containing an egg, from which the young bird eventually left, was found at Middle Harbour. During 1938, search was made for a nest in this area, but none was found, though occupied nests had been found in previous years. Then in May, 1939, a nest was commenced about thirty yards above the 1937 nest, which then had the hood disarranged. The partly-built new nest was deserted early in June and the female rebuilt the hood of the nest used in 1937, added lining material, and laid about the middle of June. Presumably the same bird built the "cradle" and then returned to the old nest nearby.

From the above observations, it will be seen that birds will build a new nest on the remains of an old nest, sometimes after five years, more often after a couple of years; they will also refurnish a nest after an interval of one year, and will occasionally use the same nest the following season, after adding fresh lining only, when the rest of the nest is in good condition.

(To be continued)

Field Naturalists' Club of Victoria

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EXCURSION

SATURDAY, FEBRUARY 22.—Seaholme and Altona. Subject:
Marine Shore Life. Leader: Mrs. J. J. Freame. Travel by
Williamstown train from Flinders Street at 2.15 p.m., and change
at Newport. Book to Seaholme. Fare, second return, 1/2½.

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VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

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Vol. LVII, No. 11



MARCH, 1941



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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1941

Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, MARCH 10, 1941

1. Minutes
 2. Subject for the Evening: "Isles of the Arafura Sea."
By C. L. Barrett, F.R.Z.S.
 3. Correspondence and Reports.
 4. Election of Member.

AS ORDINARY MEMBER.	PROPOSER.	SECONDER.
Miss E. Madden, 80 Albion Street, North Brunswick, N.10.	Mrs. M. E. Freame.	Mrs. C. L. Barrett.
 5. Nominations for Membership.
 6. General Business.
 - (a) Forthcoming Excursions;
 - (b) Questions by Members.
 7. Nature Notes.
 8. Remarks by Exhibitors.
 9. Conversazione.
-

SPECIAL GENERAL MEETING, 7.55 P.M.,
MONDAY, MARCH 10, 1941

Business: To deal with notice of motion to alter Rule 4, as given by Mrs. F. Salau at the last general meeting: Alteration to Section 4.b: "Ordinary members shall pay an annual subscription of twenty-one shillings . . . etc."

The Victorian Naturalist

Vol. LVII.—No. 11

March 5, 1941

No. 687

PROCEEDINGS

The monthly meeting of the Club was held on Monday, February 10, 1941. The President, Mr. L. W. Cooper, presided and about 80 members and friends attended.

BEREAVEMENTS

Mr. E. E. Pescott referred to the recent sudden death of Mr. D. J. Paton, a valued member who had made studies of the Bendigo flora. Mr. Chas. Daley also spoke of the work and interest in excursions to the district arranged by Mr. Paton.

Mr. F. S. Colliver referred to the recent death of a one-time member and valued friend of the Club, Mr. W. S. Abraham, late of the Geological Survey Museum. Mr. Abraham was always ready to assist at meetings or Wild Nature Shows by arranging for the loan of specimens, etc.

Members stood in silence for a few moments as a mark of respect.

WELCOME TO MEMBERS

The President expressed members' pleasure at the return of Mr. V. H. Miller, who had been ill for the past six months. Mr. Miller suitably replied.

SUBJECT FOR THE EVENING

The subject for the evening was a lecture on "The Carnarvon Range of Queensland." This was illustrated by a fine series of photographs showing various geographical features of unique interest and a particularly fine group showing aboriginal paintings. A running commentary by the lecturer, Mr. S. R. Mitchell, gave a good insight into the natural history of the area.

Several members contributed to the discussion, and the thanks of the Club were expressed to Mr. Mitchell by the President.

MEMBERS' SUBSCRIPTIONS

A motion dealing with the rate of subscription by country members, which was postponed from a meeting last year, came up for discussion. Mr. E. E. Pescott, who had moved for the postponement, explained that he did so because of the absence

through illness of the sponsor, Mr. A. H. Chisholm, and was not necessarily opposed to the proposal.

Mr. Chisholm moved that Rule 4 (c) be amended to read: "Country members, who shall be members residing beyond a radius of fifteen miles from Melbourne, shall pay an annual subscription of ten shillings, the whole of which shall be set aside to provide a copy of the Club's journal; they shall have the same privileges as ordinary members."

The effect of the motion, Mr. Chisholm said, was to reduce the rate of subscription of country members from 15/- to 10/-. It was unfair, he suggested, to ask members in the country to pay 15/- a year for the Club's journal when as non-members they could obtain it for 12/-. Further, he thought the Club should be much more strongly represented in country areas, and this might be achieved if the subscription were reduced and a drive made for members.

After Mr. W. H. Ingram had seconded the motion, considerable debate developed. Eventually, the mover accepted a suggestion by Mrs. F. H. Salau that the amount be 10/6, and the motion as thus amended was carried by a large majority.

Mrs. Salau then gave notice of motion that she would move, at a Special General Meeting to be held at 7.55 p.m. on Monday, March 10 (prior to the next ordinary meeting): "That the subscription for ordinary members be increased to 21/-."

GENERAL BUSINESS

The President announced that members were invited to send to the Committee, in writing, names of suitable persons, together with evidence, for consideration as the Club's nominee for the Australian Natural History Medallion for 1941. Should more than one nomination be received the Committee would select one from them.

The President announced that the April meeting would be held on April 7, 1941.

Mrs. C. L. Barrett mentioned that two members, Miss Sylvia Duncan and Mr. Bond, had each received an Exhibition in Botany at the University examinations last year, and on the members' behalf the President congratulated them.

EXHIBITS

Mr. E. E. Pescott.—Flowers and bracts of *Ceratopetalum gum-miferum* (Christmas Bush) cultivated at Camberwell.

Mr. R. G. Painter.—Garden-grown native flora as follows: *Eucalyptus nutans*, *Melaleuca laterita*, *M. hypericifolia*, *Humea elegans*, *Baeckia virgata*, *Swainsona galegifolia*, *Viola hederacea*, *Sollya heterophylla*, *Brunonia australis* (grown from seed planted August, 1940), *Nicotiana Flinderensis*, etc.

AN ADDITION TO THE ORCHIDACEAE OF VICTORIA

By W. H. NICHOLLS, Melbourne

Prasophyllum parviflorum, sp. nov. *Planta gracilis vel robusticula* 18-45 cm. alta. *Spica laxa, longissima. Flores* 10-40 parvæ, virides vel viridi-purpuræ. *Sepalum-dorsale ovatum, acuminatum, incurvatum*, 3 mm. longum, *sepala-lateralia elliptico-falcata, connata vel libera, parallela* 4 mm. longa. *Petala erecta, lineara-falcata, incurvata*, 3 mm. longa. *Labellum sub-sessile, erectum, recurvatum; marginibus integris; pars callosa prominens. Columna brevissima; laciniae laterales oblongæ; apices obliqui.*

A slender or moderately-robust plant about 18-45 cm. high. Leaf-lamina slender, not exceeding the inflorescence (or rarely so). Flowers about 10-40, small, somewhat globular in form (only noticeable in fresh flowers), on short pedicels, subtended at the base by a short acute bract, in a long loose spike, standing well out from the axis; green or green with purplish-brown markings or almost wholly purplish. Dorsal sepal ovate-acuminate, incurved, about 3 mm. long; lateral sepals elliptic-falcate, concave, parallel, about 4 mm. long; connate to the middle or at base only, rarely free. Petals erect, incurved, linear-falcate, about as long as the dorsal sepal. Labellum sub-sessile, erect at the base, recurved more or less in its distal third; membranous part wide with entire margins, but appreciably narrowed upwards; constricted towards the tip (as in *Pr. Frenchii*, F. Muell.) in some flowers; callous part prominently raised, especially beyond the bend, and extending to within a short distance of the extreme tip; at the base traversed by a wide channel, which continues as a narrow groove upwards beyond the bend. Column short; appendages about as high as the rostellum, oblong with oblique tips; basal lobes small, compressed and oblique. Stigmatic surface wide. Anther dark red. Pollina granular; caudicle of medium length.

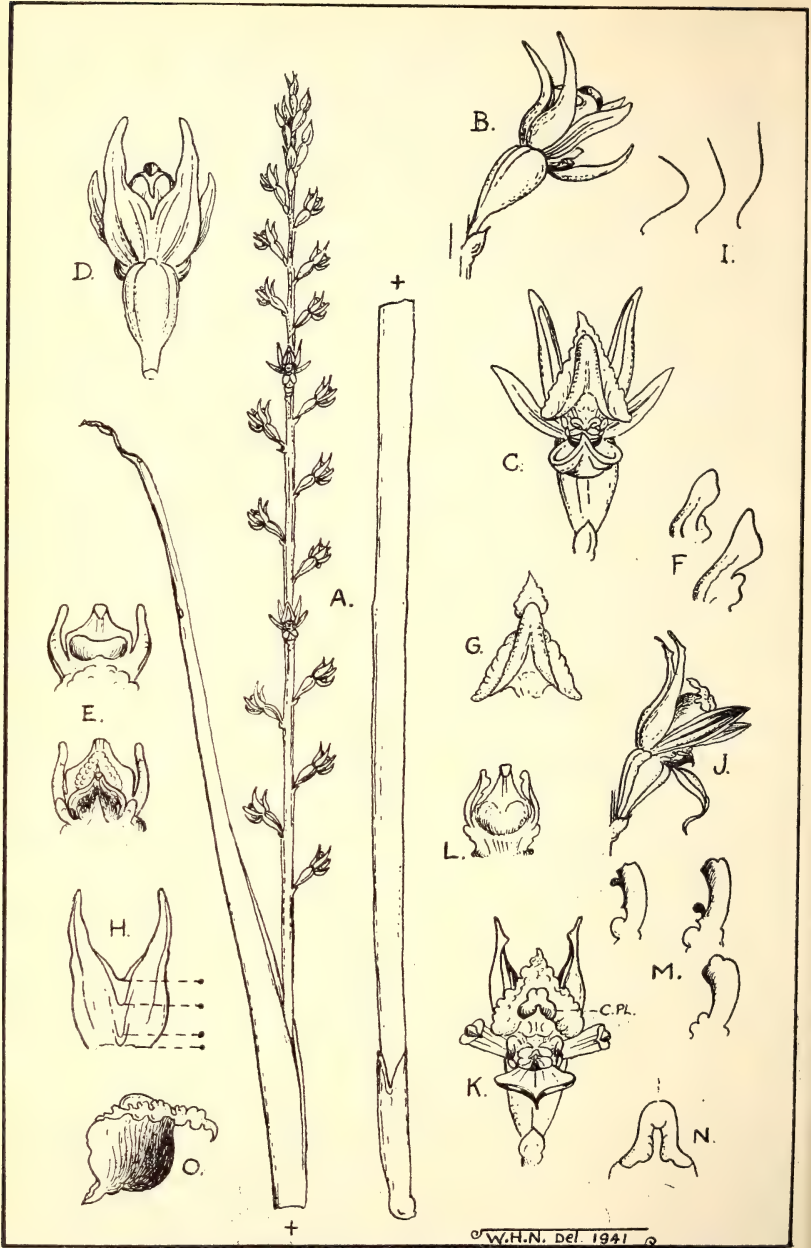
Flowering period: October to January.

Habitats: Yarram-Port Albert (Miss E. Devonshire); Gorae (via Portland), (Mr. Murray Holmes); Wonthaggi (Noel de Lacy—per Mr. E. Homann); Singapore (Wilson's Promontory) (Miss E. Devonshire).

Synonymous *Pr. Hartii*, Rogers, variety *parviflorum*, Rogers.*

This plant differs from *Pr. Hartii*, Rogers, in its more slender habit, smaller more globuliform flowers, a different labellum, having a different form of callous plate; also entirely different column wings (appendages), and stouter lateral sepals, which are invariably connate, and not pronouncedly bidentate at the

*See description in *Trans. Roy. Soc., S.A.*, liv, (1930) p. 44.



Prasophyllum parviflorum sp. nov. and *Pr. Hartii* Rogers.

tips (see figures). It appears to be more closely allied to *Pr. Frenchii*, F. Muell., than to *Pr. Hartii*.

This *Prasophyllum* was first forwarded to the writer by Mr. A. J. Tadgell (seasons 1932-1933).

Locality of finding and collectors:—Port Albert, Miss E. Devonshire, A. J. Tadgell.

It is reported as favouring damp situations and being plentiful throughout its distribution.

A variable species in details of flowers, yet easily distinguished in the field from other described forms by the slender character of the inflorescence—the flowers are well-spaced and usually the spike is long. The shape of the labellum is variable to some degree. In spite of the plenteous supply of specimens received from its habitats since its discovery, I have yet to see a flower of this species possessing the labella-segment, or the column-appendages, which are truly outstanding characteristics of *Pr. Hartii*.*

I would like to append here that I have pointed out to Dr. Rogers the great dissimilarity between *Pr. Hartii*, and the form here dealt with as a valid species, suggesting he give it full status. He replied to the effect that for the present it would perhaps be better to let it stand as a variety, and when additional material came to hand for examination, it could, if thought necessary, be very easily dealt with as suggested. Apparently circumstances have prevented this—thus the time is now long overdue for the appearance of this form as a species.

KEY TO FIGURES

(*Pr. parviflorum* sp. nov. and *Pr. Hartii* Rogers)

- A.—*Pr. parviflorum* sp. nov. a typical specimen.
 - B.— " Flower from side.
 - C.— " Flower from front.
 - D.— " Flower from above.
 - E.— " Columns (2 views).
 - F.— " Column appendages.
 - G.— " A labellum from front showing constriction beyond bend.
 - H.— " Lateral sepals from above showing varying degrees of union.
 - I.— " Depicting variation in reflexion of labellum at bend.
 - J.—*Pr. Hartii* Rogers. A flower from side.
 - K.— " A flower from front.
 - L.— " Column showing stigma, etc.
 - M.— " Column appendages.
 - N.— " Callous plate from front. (Note variation of same in flower, Fig. K.)
 - O.— " A labellum from side.
- (Figure A about natural size.)

*In note referred to in previous footnote Dr. Rogers says: "Except that it possesses the extremely characteristic labellum of *Pr. Hartii* it might very reasonably be regarded as a distinct species."

THE PLATYPUS ON WILSON'S PROMONTORY

By J. A. KERSHAW, Melbourne

The recent discovery of the existence of the Platypus in the National Park at Wilson's Promontory will come as a welcome surprise to all those interested in this sanctuary. Although not uncommonly met with in the streams on the adjacent mainland, no indication of its presence on the Promontory has hitherto been discovered. Strangely, its absence has all along been taken for granted, and I doubt if anyone has ever given a thought as to the possibility of its being already established there.

Its haunts appear to be the head waters of the Tidal River, the Titania Creek and the smaller streams in Lilypilly Gully. For some distance above the bridge the Tidal River traverses marshy ground, thickly overgrown with reeds and fairly dense scrub; but farther up the streams in Lilypilly Gully and the Titania Creek are more exposed, with low banks.

The animal was first seen by two men, independently of each other, who were engaged on road construction, and whose camp was closely adjacent to the Tidal River. It was swimming in the stream well above tidal influence and was watched for some time, during which the men were sufficiently close to be certain of its identity. As both were familiar with these animals and had frequently seen them in streams on the mainland, they did not regard its occurrence on the Promontory as unusual.

On another occasion, apparently, the same animal was seen by Mr. George Glendenning, who informed me he had watched it for some time swimming about near the Tidal River bridge not more than ten feet from where he was standing.

The reports are of particular interest, if only from the fact that Wilson's Promontory is practically isolated from the mainland. Its only land connection is by the comparatively narrow isthmus extending from its north-western corner, the southern portion of which, for some nine or ten miles, is comprised of ancient and recent drifting sand dunes, and entirely devoid of any stream, thus forming an effective barrier to the migration of animals dependent on fresh-water streams for their existence. Under such conditions one is given to wonder how and when did the Platypus reach the Promontory.

It is satisfactory to know that both species of the unique egg-laying monotremes are safely established in this sanctuary, the *Echidna* being distributed all along the western coast.

In this journal (Vol. LVII, p. 104) I referred to the possibility of the Tiger Cat (*Dasyurus maculatus*) existing on the Promontory, and stated that, with a view to its preservation, efforts were being made to obtain specimens for liberation there. I am now

PLATE XX



Giant Natural Arch of Sandstone, Carnarvon Range.

Photo.: Weir, Roma.



Rock-shelters in the Carnarvon Range are full of aboriginal stencils of feet, hands, and other objects.

Photo.: Queensland Forest Service.

pleased to be able to state that, through the generosity of Mr. David Fleay, Director of the Healesville Sanctuary, three fine specimens of this animal have been received for liberation in the Park.

It may be of interest to mention that since the Park was established in 1908, 182 specimens and 21 species of native mammals, 86 specimens and 9 species of birds, and about 60 species of native plants and seeds have been introduced.

A SCENIC WONDERLAND

By S. R. MITCHELL, Melbourne

In September of 1940 I was a member of a party which visited the Carnarvon Ranges, a spectacular series of mountains about 100 miles north of Roma, in south-western Queensland. The outing proved to be very interesting.

The Carnarvon National Park is a reserve of 65,000 acres and is a geologic and scenic wonderland. In 1845 Sir Thomas Mitchell passed south and west of this country, and discovered the Maranoa and other rivers. Leichhardt also mentions the country on the eastern side.

The Carnarvon Ranges are the remnants of an enormous dissected fault block of practically horizontally bedded sandstone, underlain by shales. It was formerly covered by thick flows of basalt, portions of which now remain as cappings on the higher parts. The Buckland Tableland is a residual rising to an elevation of 3,000 to 3,500 feet above sea-level, with gorges and canyons eroded to a depth of 1,000 feet. Much of this erosion appears to have been associated with extensive faulting and jointing, giving rise to vertical sandstone cliffs, narrow winding canyons and fantastic rock pillars and blocks often resembling ruined castles.

The sandstones are of triassic age and are known as the "Bundambo." Of fresh-water origin, they show pronounced current bedding, indicating shallow water deposition of the sand, and are similar in nature and origin to the Hawkesbury sandstones of New South Wales. The only organic remains found are petrified woods, which are the siliceous replacements of parts of trees that have been buried with the sediments.

The Carnarvon Ranges being portion of the main watershed, water will flow either east into the Pacific or west into the Southern Ocean, by way of the Murray River. These outlets are separated by over 2,000 miles of coast. The Dawson, Nagoa and Mackenzie Rivers flow into the Fitzroy and reach the sea near Rockhampton, whilst the Maranoa and Warrego join the Darling, and some water even flows into the Barcoo and at times reaches Lake Eyre.

A 20-inch to 26-inch rainfall enables a sub-tropical vegetation to flourish in the valleys. This comprises such forms as Livingstone Palms, Macrozamia, Casuarina, Giant Angophora, Tree Ferns, Fig and white Cedar trees, a yellow Hibiscus, and a Grevillea with a large red flower; whilst on the higher sandstone plateaus grow plants similar to those of the Blue Mountains and the Grampians.

The entrance to the Carnarvon Gorge is a narrow defile about 100 feet wide between towering sandstone cliffs that are practically vertical, and the deep valley of the Carnarvon Creek can be followed for over 20 miles.

The abundance of Macrozamia palms with their periodical crops of nuts attracted the aborigines. Numerous rock shelters provided suitable places for ceremonies, and rock cavities for the burial of their dead. The Macrozamia nuts are poisonous. Sir Joseph Banks records the fact that when Captain Cook and his crew were at the Endeavour River in 1770, pigs were fed with them and were poisoned, and some of the crew who partook of them were violently sick. The natives treated them to make them edible by crushing the nuts and soaking them in water and the poisonous principle was leached out. Drying and grinding into a meal and cooking made them safe to eat.

The Carnarvon Ranges are particularly remarkable for their aboriginal art galleries. Drawings in various colours, stencils, and carved designs are done on the walls of large rock-shelters, and on smooth faces sheltered by overhanging rocks.

The first shelter examined, some nine miles up the Carnarvon Gorge on the southern side, is an enormous recess measuring approximately 270 feet in length and 100 feet in height. It extends for about 69 feet in from the cliff face and is a fine example of weathering. Large masses of rock have fallen from the ceiling and lie piled up towards one end of the shelter and some of these fallen blocks have inscribed designs on them. Much of the back of the shelter, up to 6 or 7 feet from the floor, is covered with designs, the majority being stencilled hands. The stencilling was done by spraying water and ground pigment from the mouth over the outspread hand, or other object. In several cases a foot has been similarly treated, the native having to be held up with his foot pressed on the wall whilst the operator did the spraying.

Another interesting example shows the forearm and hand. Three types of boomerangs have been depicted by this method: the ordinary throwing type; a type which is possibly ceremonial, wide in the middle, tapering to a point at each end with the angle equal in each limb; and a third type known as the "Lil Lil." Several groups of 6 or 7 boomerangs can be seen, probably done with two boomerangs. The method would be to work the upper one down alternatively and spray between the two.

Another method used was by painting a design with a paint brush, a brush probably made from beaten-out stringybark or other fibre. One characteristic design consists of a series of parallel lines with another crossing at an acute angle, often enclosed by a curved line forming a net-like design. This particular pattern is common and evidently important, and it has been suggested that it might be a totemic or food-increase representation of the *Macrozamia* seed-cone, which has a definite criss-cross pattern.

The colours used for this particular work were either red, black, white, yellow or pink. Hafted stone tomahawks, and a peculiar oval design with a tail at one end are also common. The models for the latter may have been a bull-roarer. The lower portion of the wall for 3 feet or so is largely covered with badly-weathered carved designs; innumerable parallel grooves, and many grooved ovals with an elongated depression in the centre. A few bird or animal tracks are also discernible.

An even more remarkable rock-shelter is near the entrance to a canyon branching to the south-west, about four miles from the entrance. A rock face some 230 feet long and sheltered by overhanging rock is a veritable fresco of stencilled hands, feet, weapons and totemic signs in red, yellow, black and white pigment. They cover the rock face to a height of six feet. On the lower parts again are numbers of carved or incised designs, all badly weathered and much older than the coloured designs.

Just beyond the nine-mile shelter a narrow canyon is entered at right angles to the Carnarvon Gorge. It is said that this extends a distance of over two miles through the range. The canyon runs about 100 yards, turns to the left, and then changes direction every few hundred yards in straight reaches. This peculiar feature is evidently due to jointing or faulting in the sandstone providing lines of weakness for erosion to cut the canyon to its present depth through a thickness of eight or nine hundred feet of hard rock. It varies much in width and is about 25 feet on the floor which is strewn with water-worn boulders of basalt. About 10 feet above the floor the walls close in to a width of about 10 feet and then widen again. It would appear that there have been two base levels of erosion, a higher one and the present one, and there may be some relationship to the two periods of deposition of sediment shown in the alluvial flats of the Carnarvon Creek and the series of terraces some 10 to 15 feet above these flats.

Higher up the canyon the irregular walls carry a growth of ferns, orchids, elkhorns and creepers. Quite large trees are anchored in the rock crevices and ledges where the canyon widens out.

Lower down the Carnarvon Creek is a very fine waterfall; a vertical face of sandstone over which the water falls in a curtain-like sheet. Climbing to the top, a narrow canyon is followed for

several chains, and turning to the right one enters a narrow cave from the end of which an underground waterfall plays as a silvery streak, only to be seen with artificial light. This water finds its way down through 800 feet or so of sandstone.

Above the lower fall is a fine clump of *Angiopteris*, a primitive fern with very large fronds growing from the base only. These are interesting, as this form is only known on the Daintree and several other rivers of North Queensland.

Whilst on this trip a number of ants were collected, and Mr. J. Clark, of the National Museum, Melbourne, informs me that several species are new to science. In the vicinity of the Carnarvon Range a saw-fly has become a pest. The fly strips the foliage from the iron bark trees, and the dead chrysalids fall on the ground and are eaten by the cattle, causing death. It is apparently a case of mineral deficiency in the food. Hundreds of head of cattle die annually from this cause.

There are many other features of interest to the naturalist in this area, particularly in the Moolyamber Gorge, where unique examples of erosion of soft shales occur. This reserve should be much better known to Australians.

On Early Storms Station a 3-foot seam of oil shale has been located and tests were made during the visit by distilling some in a retort. Some crude oil was produced. The remoteness of this seam of oil shale, however, does not make it attractive commercially.

On our return to Brisbane, officers of the Queensland Forestry Department were interviewed regarding the unsuitable names proposed for scenic features of the reserve, such as Aljon Falls, after Alderman Jones of Brisbane, and O'Brien Gorge, and recommendations were made to use only euphonious aboriginal names. Members will be pleased to learn that the Department is quite in accord with this, and in future only native names will be used. This has been done in the better-known Lamington Reserve. The officers of this department are to be commended for their attitude in this matter.

A NOTE ON ORCHIDS

The Alpine Bird-Orchid (*Chiloglottis Pescottiana*, Rogers), which in Victoria is restricted to the Cravensville district, in the north-east of the State, has turned up in Tasmania. In Victoria this very rare terrestrial Orchid grows in association with *Ch. Gunnii*, Ldl., and *Ch. trapeziformis*, Fitz., and has been thought by some to be a hybrid of the above two species. But in Tasmania, on Mt. Barrow, where *Ch. Pescottiana* was collected by Mrs. Pearl Messmer, of Sydney (N.S.W.) towards the latter end of 1940; it was found in association with *Ch. Gunnii* and *Ch. Muelleri*, Fitz. The other species (*Ch. trapeziformis*) has to date never been recorded for the island State. Mrs. Messmer reports it in abundance.

W. H. NICHOLLS.

PLATE XXI



Typical Nest-cradle of Lyre-bird; July, 1939.



Typical Nest of Lyre-bird; built and used in 1937.

NESTING HABITS OF THE SUPERB LYRE-BIRD

By K. A. HINDWOOD, Sydney, New South Wales

(Continued from last issue)

Cradles or Nest Platforms:

When building, the Lyre-bird first constructs a more or less circular framework of stout sticks, the actual domed nesting chamber of fine rootlets, twigs and fibres being built on to this base. These cradles or nest platforms are higher at the back than at the front and have a solid foundation of mossy earth in the centre of the framework, apparently for the purpose of an anchorage. Often the cradles are merely built and never used as foundations for future nests. However, they may be added to and the nest completed the following season or even after the lapse of several years. In the present state of our knowledge, it is difficult to explain satisfactorily the purpose of these cradles.

Some early notes on these uncompleted nests have been published by F. E. Howe (17), who gives an instance of a platform built in 1917, which was not added to in 1918, but was completed in 1919 and contained an egg on July 13 of that year. In another case, a platform built in 1925 was completely destroyed by fire late in 1925 or early in 1926. A complete nest was built on the same spot during July of 1926 and contained an egg on August 1. Two platforms were found in 1926; one of these was completed and ready for an egg in June, 1927; the other had been added to but was not then completed. Discussing the same subject, Tregellas (2) remarks: "Sometimes a nest is built on a foundation laid the previous year, sometimes on one laid years before . . . last year one was built on a stump where a beginning was made two years before."

I have records of three cradles built by birds in National Park, Sydney, that were completed and used the following season:

- (1) Cradle built in 1931, nest completed and egg laid in July, 1932.
- (2) Cradle built in 1933, nest completed and egg laid in July, 1934.
- (3) Cradle built during June, 1933, nest completed during May, 1934, and egg laid early in June of that year.

While many platforms are used the season after they are built, this does not necessarily mean that the birds did not lay the year the platforms were constructed. Apart from assumption, there is not the slightest evidence that such is the case. Only by marking individual birds and observing them throughout the breeding season could we tell whether they nested elsewhere, after deserting the

cradle. The following evidence, admittedly somewhat indefinite, seems to indicate that this may sometimes happen.

At Middle Harbour a female built a cradle in July, 1939, but deserted this, refurnished a nest used in 1937, which was about thirty yards from the cradle, and laid therein. In June, 1940, a nest containing an egg was found in the same gully; about twenty-five yards away was a cradle of fresh sticks obviously built earlier in the season. From observations over the past nine years, it is apparent that only one pair of birds nest in this particular gully each year; therefore, it seems possible that the female may build another nest, or even use an old one, after first constructing a cradle.

The matter of these cradles needs detailed investigation before any sound reason can be advanced to explain their purpose.

Analysis of Egg Dates:

In extracting the data for an analysis of egg dates, it became apparent that in only a few instances were the actual dates of the laying of the eggs known. In eggs taken for collections, the state of the incubation is sometimes recorded. It should be clearly understood that the following figures are based on the dates on which the eggs have either been taken or recorded. This information, of course, does not allow exact conclusions to be made, but will, I think, give what may be termed "average deductions," enabling a near approach to the true position. In all, 194 records have been used; these have been taken from published notes, from museum and private collections, and other sources.

Recorded egg-dates:—

	May	June	July	Aug.	Sept.	Oct.	Total
Victoria	—	7	55	40	4	2	108
New South Wales	2	22	43	16	1*	2	86

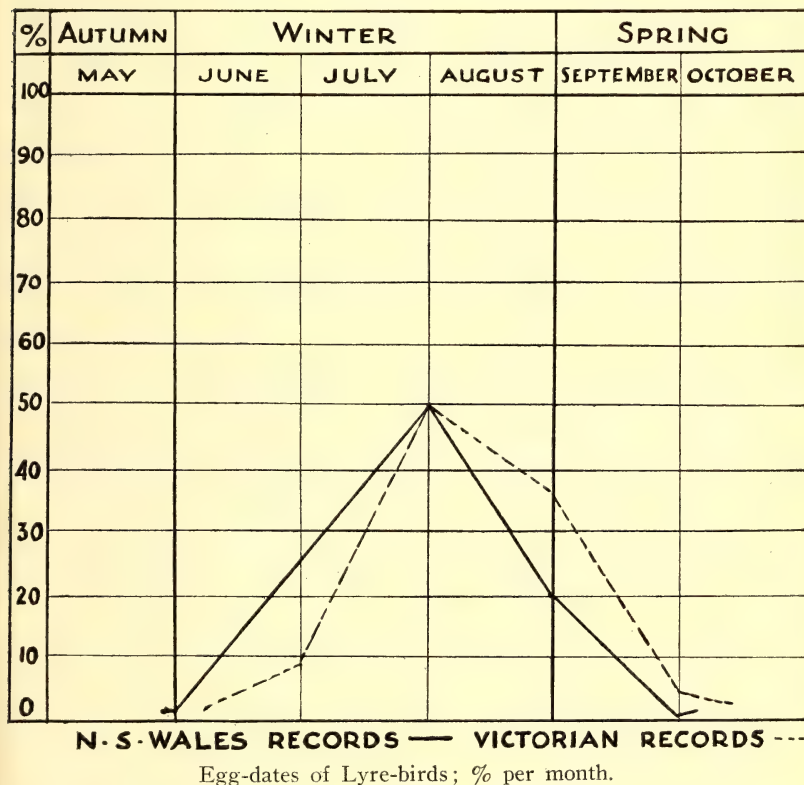
The above figures are expressed graphically in the chart on opposite page based on a percentage formula:—

The earliest egg-dates for New South Wales are May 26 and May 28: in both instances the eggs were laid in old nests, one of which was known to have been occupied the previous year. These early eggs are accounted for by the fact that the birds had not to spend several weeks in constructing a new nest. The earliest egg dates for Victoria are June 10 and June 21. In New South Wales the main egg-laying months are June (25%) and July (50%); in Victoria, July (50%) and August (37%). Both in New South

*In *The Emu* (vol. XXIX, p. 192), E. L. Hyem records a Lyre-bird at Barrington, New South Wales, sitting in September, 1937. In reply to my enquiry, Mr. Hyem replied that the nest contained an infertile egg. In view of the state of the egg, the record is *not* included in the above table.

Wales and Victoria half the total eggs laid throughout the season have been taken or recorded in July, though more birds in New South Wales lay in June and less in August than in Victoria, the ratio being: New South Wales, June, 25%, August, 18%; Victoria, June, 6½%, August 37%.

I know of no evidence that will explain why more birds in New South Wales commence laying in June than in Victoria. Under



normal circumstances and in particular areas it seems that a bird, or birds, will commence incubation about the same time each year. Observations made on nests in a small gully at Middle Harbour, near Sydney, show that the times of hatching of the young over a number of years were: July 20 (?), 1932; July 20 (?), 1933; August 3 (?), 1934; July 22, 1937; July 22, 1937; July 29 (?), 1939; July 20 (?), 1940. The dates followed by a question mark are approximate to within one or two days.

In concluding, I wish to express my sincere thanks to Messrs. A. H. Chisholm, F. E. Howe, R. T. Littlejohns, J. A. Ross, D. J.

Mahony (National Museum, Melbourne), and several other naturalists, mentioned in the text, for information supplied and other courtesies.

Since the above remarks were written there have appeared in the *Bulletin of the New York Zoological Society* (Vol. XLIII, No. 5, September-October, 1940, pp. 146-152) some observations on the nesting habits of the Lyre-bird, by J. E. Ward of Sydney. An egg removed from the nest the day it was laid (June 5) and placed under a domestic fowl, which sat almost continuously, hatched 28 days later (July 3). This unusual experiment proved one thing, that is, the minimum incubation period of a Lyre-bird's egg; but it has of course no bearing on what would happen under natural conditions, when circumstances tend to retard the development of the embryo from a week to as much as four weeks longer than 28 days. A hard-boiled, stained egg of a domestic fowl was placed in the nest from which the Lyre-bird's egg was taken and the female sat upon this for nine weeks before abandoning the nest. Thus an approximate maximum brooding period was obtained by Mr. Ward.

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NEW NATIONAL FOREST

On the advice of the Royal Australasian Ornithologists' Union, the Minister for Lands in Victoria has set aside as a National Forest an area of 42,000 acres in the Hattah district, between Ouyen and Mildura. It is hoped that the reservation will serve as a breeding-area for the mallee-fowl, and that it will also assist to save the pink cockatoo, the regent and mulga parrots, and various other distinctive birds. Flora in the area also affords much interest. The R.A.O.U. has recommended that Messrs. L. G. Chandler, N. J. Favalaro, J. Jones and J. H. Willis be accepted as an advisory committee to function with the Forestry Department in controlling the area.

THE FLORA OF GRAYTOWN

By N. A. WAKEFIELD, Genoa

During 1939 the writer was stationed for several months midway between Heathcote and Nagambie, at the small rural township of Graytown; and opportunity was taken to compile a list of the local flora. As the cleared area is practically surrounded by State forest, there is an excellent demonstration of the changes wrought by the advent of man and his flocks into the world of plants.

THE FOREST

The best example of the original flora is to the north in the Moormbool Forest, where Red Ironbark, Yellow Box, Red Box, Grey Box, Spotted Gum and patches of Green Mallee and Small Cooba clothe the slightly undulating country.

Beneath these Eucalypts, innumerable shrubs form thickets—Daphne Heath, Mountain Grevillea, Sticky Boronia, Fairy Wax-flower, Rough Acacia and Gold-dust Acacia being predominant, while Hakea, Grasstree, many Peas, Acacias, Beard-heath, etc., are less abundant.

The mass of colour on the forest floor in the springtime is a sight to be remembered. Extensive patches of Lilies, Sun-orchids, Caladenias, Bluebells and Pincushions provide great masses of blue, and Buttercups, Sundews, Heaths and Everlastings show a wonderful variety of red, gold and white.

On the rocky forest ridges Red Ironbark appears, and rock-loving species such as Rock Fern, Salt-bushes and Goodenias. In the less scrubby parts, Kangaroo Grass, Wallaby Grass and Tussock Grass provide fair picking for cattle in a good season. In the moister depressions, Bulbine Lily, Bottle-daisies and a few of the more succulent Composites flourish, together with the introduced Cat's-ears.

Some of the forest flora still remains in the grazing areas, by roadsides or on stony rises; but it is gradually giving place to introduced plants and those native species which have adapted themselves for life in the pastures. The latter cannot now be found in the original state, for the plain on which they previously grew has been cleared for grazing.

THE PASTURES

In the permanent swamps are Nardoo, Pillwort and most of the Pondweeds and other water-loving species common in Victoria. Bordering these waters are generally a great number of Rushes, Sedges, Arrow-grasses and other species, including some of the native Grasses, Docks and Composites.

On the moist pastures and flats, in sandy soil, there are a number of grasses and sedges; but most interesting of all is the amazing variety of minute species. Space does not allow the mentioning of them all, but they include many Centrolepis, Pennyworts, Styleworts, and all the Victorian representatives of the Stonecrops and Brizula. A few of the native orchids still bloom here in the open; and many introduced species including Grasses, Stork's-bills, Rushes and the two Microcala abound.

On the main pastures, a few Bulokes and Banksias have been left for shade in the summertime. The main fodder consists of native Wallaby Grasses and introduced Grasses and Clovers. Otherwise the common species include mainly Daisies, Cudwells, Sunrays and the introduced Bartschia, Soliva and some Thistles, all of which grow prolifically, the latter having to be cut and burnt each year. Some of the best pastures have been improved by the planting of Rye Grasses and Clovers.

Bordering the open creeks, in the pastures are River Red Gum, Wiralda

and Swamp Paper-bark. Plants such as Blackberries, Bracken and Sweet Briar are found here, but not to any great extent.

In the waste lands and neglected gardens, one finds the usual riot of Docks, Brome-grasses, Mallows, Sow-thistles and other introduced weeds.

Excursions into the neighbouring districts showed very little variation in the flora type. To the west, about the Campaspe River, some rock-loving species appear; including Bristly Cloak-Fern and Blanket Fern. To the north, towards Rushworth, a few Mallee species grow; and at Whroo, in mineshafts, are some fern species. In the vicinity of Nagambie, on the Goulburn River, other aquatic plants such as Azolla and Bulrush are found.

In the Graytown district, the flora represents 68 families, 247 genera and 443 species. Of these, 316 species are endemic, representing 62 families and 180 genera. The introduced plants belong to 27 families and 80 genera, with a total of 127 species, 69 of which belong to the families Graminae, Leguminosae and Compositae.

A full, more technical report on the Graytown Flora has been placed in the Field Naturalists' Club Library.

THE LATE DAVID J. PATON

For over fifty-seven years the *Victorian Naturalist* has been regularly posted, month by month, to 167 High Street, Kew. It went for over forty years to Mr. F. G. A. Barnard, J.P., one of the original members of the Club, and for a long period its honorary Editor. After Mr. Barnard's day it was posted to David J. Paton. And now Mr. Paton has passed away and the posting will cease.

Mr. D. J. Paton joined the Club in March, 1914, and was recorded as having a keen interest in botany. When first known to members he was chemist in charge of the United Friendly Society's Dispensary at Bendigo. It was there that he became acquainted with Mr. Charles Daley, B.A., F.L.S., and the two became firm friends. They made many excursions to that unique botanical district, the Whipstick Scrub, and on five or six occasions they led annual Club country excursions to that interesting area. About 1925, Mr. Paton transferred to Melbourne, having acquired the business of Mr. F. G. A. Barnard, with whom he had become friendly on the Whipstick excursions. From that time, he was a regular attendant at the Club meetings.

Botany was his hobby, and he had a very keen insight into the native plants of our State. Several articles by him were published in the *Naturalist*, and many specimens from the Whipstick were shown at the Club meetings.

Mr. Paton was of a reserved and quiet disposition, and so did not become known to many members. But those of us who knew him appreciated his knowledge and his worth, and we greatly regret his passing. The sympathy of the Club is extended to Mrs. Paton in her bereavement.

E. E. PEScott.

THE LATE EDWIN ASHBY

We regret to announce the death, at the age of 79 years, of Mr. Edwin A. Ashby, of Blackwood, South Australia. Mr. Ashby was a keen ornithologist, conchologist, and horticulturist; his garden of native plants has long taken rank as one of the finest in Australia, and he was always ready to help others in this respect. His name is commemorated in *Ashbyia lovensis*, the Desert Bush-Chat, and in various chitons.

Field Naturalists' Club of Victoria

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EXCURSIONS

MONDAY, MARCH 24 (Labor Day Holiday).—Millgrove. Leader:
Mr. P. Crosbie Morrison, M.Sc. Subject: General. Travel by the
8.25 a.m. Warburton Train from Princes Bridge Station. Book
to Millgrove; return fare, second class, 5/11. Bring food for two
meals.

ADVANCE NOTICE.—The excursion arranged for Mornington during
the Easter holidays has been cancelled. Instead an excursion will
be held to Narbethong on Easter Monday, April 14. Motor
transport can be arranged at 7/6 per head provided twenty
persons book. Names should be handed to the Secretary at the
March meeting.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.
VICTORIAN SEA SHELLS, by C. J. Gabriel, describing 150 shells, all to be found in Port Phillip, is abundantly illustrated. Price, 1/6.

A CENSUS OF VICTORIAN PLANTS, by the Plant-names Committee of the Club, contains the vernaculars of all our plants. Unbound copies only from the Hon. Librarian, price 1/6, posted 1d. extra.

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Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, APRIL 7, 1941

1. Minutes.
2. Subject for the Evening: "A Zoological Expedition to South America," by Prof. Agar, O.B.E., M.A., D.Sc., F.R.S.
3. Correspondence and Reports.
4. Election of Members.

AS ORDINARY MEMBERS.	PROPOSER.	SECONDER.
Miss B. Williams, Flat 1, 20 Burwood Road, Hawthorn, E.2.	Mrs. M. A. Legge.	Mr. L. W. Cooper.
Miss W. Webster, 44 Karma Avenue, Malvern East, S.E.5.	Mr. L. W. Cooper.	Mr. F. S. Colliver.

AS COUNTRY MEMBERS.		
Mr. Horace S. Stirton, Unity Hall, View Street, Bendigo.	Mr. Marc Cohn.	Mr. L. W. Cooper.
Mr. Keith E. Ash, 119 Carpenter Street, Bendigo.	Mr. Marc Cohn.	Mr. L. W. Cooper.
5. Nominations for Membership.
6. General Business.
 - (a) Forthcoming Excursions;
 - (b) Questions by Members.
7. Nature Notes.
8. Remarks by Exhibitors.
9. Conversazione.

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No. 688

SPECIAL GENERAL MEETING

Mrs. F. H. Salau formally moved the motion: "Ordinary members shall pay an annual subscription of twenty-one shillings." (This was a proposed alteration to Rule 4, Section C, and would increase the city members' subscription by 1/-.) The motion was seconded by Mr. W. H. Ingram. A full discussion took place. Finally, the motion was placed before the meeting and rejected by a large majority. The meeting was then closed and the proceedings of the ordinary meeting were carried on.

ORDINARY MEETING

The monthly meeting of the Club was held on Monday, March 10, 1941. The President, Mr. L. W. Cooper, presided and about 100 members and friends attended.

THE ARAFURA SEA

The subject for the evening was a lecture on "Islands of the Arafura Sea," given by Mr. C. L. Barrett. A large series of photographs and natural colour lantern slides illustrated remarks on this little known area north of Australia. The lecturer gave members a good insight into this wonderland. Particular mention may be made of ethnographic studies made for the first time. At the close of the lecture Mr. Barrett answered several questions, and the President expressed the thanks of the Club for the interesting address.

CORRESPONDENCE

A letter was received from Mr. David Stead (Sydney) offering copies of his book, *Giants and Pigmies of the Deep*. (A list was filled in at the meeting; no more copies are available.)

REPORTS OF EXCURSIONS

Mrs. Freame reported on her recent excursion to Seaholme.

ELECTION OF MEMBER

Miss E. Madden was duly elected as an Ordinary Member of the Club.

MAY 16 1941

NATURAL HISTORY MEDALLION

The President announced that members were invited to submit nominations, together with evidence, for consideration by the Committee. From these nominations the Committee will select the Club's nominee.

EXHIBITS

Miss J. W. Raff:—Case of pinned insects showing the gradual emergence of the large Green Cicada from its nymphal shell. Also specimens of the small grass yellow butterfly (*Terias smilax*) collected in the University grounds.

Mr. A. A. Baker:—Collection of petrified woods from Limestone Creek, Omeo.

Mr. C. French:—Specimens of black or fern thrips; also leaves of Rhododendrons, Fuchsias, Ferns, etc., showing damage caused by these insects. Specimens of *Humea elegans* from the Grampians (garden-grown).

Mr. R. G. Painter:—Garden-grown native flora:—*Eucalyptus nutans*, *Melaleuca laterita*, *Nicotiana Flindersiansis* (native hybrid), *Viola hederacea*, *Pimelea decussata*, *Correa Lawrenciana*, *C. reflexa*, *Thomasia petalecalyx*, *Liparis reflexa*, *Calanthe veratrifolia*, *Swainsona galegifolia*.

NEXT MEETING

The President directed members' attention to the fact that the next meeting will be held earlier than usual, the date being April 7.

AN ORCHID NOVELTY

A new orchid, *Prasophyllum Rogersii* Rupp, was discovered by the writer in January, 1928, at an altitude of about 5000 ft. on Barrington Tops, N.S.W., and was for some time thought to be endemic there. It was described in *Proc. Linn. Soc. N.S.W.*, liii, part 4, 1928. (The author can supply a limited number of reprints if requested.) Later, I was struck with the resemblance of certain New Zealand specimens sent by Mr. H. B. Matthews, of Kaitaia, N.Z., to the Barrington Tops orchid. Critical examination satisfied me that they were in fact identical. Mr. Matthews had found them as far back as 1924, at Kaitaia (North Island).

Now a third locality comes to light. In November-December, 1939, Mr. A. N. Olsen, of the University of Tasmania, collected specimens of a *Prasophyllum* on Knocklofty, near Hobart, which he sent for identification to Mr. W. H. Nicholls, of Footscray, Vic., and Mr. Nicholls considered them to be identical with *P. Rogersii*. Through the courtesy of Mr. Olsen I have received two specimens of the Knocklofty plant, and I am glad to endorse Mr. Nicholls' opinion. Victorian orchid seekers should watch out for this species in their own State, where I think it is quite likely to be discovered. It belongs to the section *Euprasophyllum*, and is not one of the "pygmies."—H. M. R. RUPP.

[Note: This species was collected at Mallacoota (Vic.) in January, 1930, the collector being Mr. V. Miller.—W.H.N.]

LYRE-BIRDS ADOPT A FOSTER-CHILD

By DAVID FLEAY, Director Badger Creek Sanctuary

On January 10th the driver of a timber truck travelling from Marysville towards Narbethong discovered a young Lyre-bird crouching by the roadside. Somewhat puzzled by the presence of this very late young bird on a main highway, the driver unwisely (but with later highly interesting results) brought the bird with him to Healesville, and from there it was forwarded to the Sanctuary.

Evidently between two and three months old, the young bird was sufficiently immature to be comparatively helpless both in regard to its power of flight and its ability to feed itself. Rusty-red colour-patches on both throat and forehead were the most noticeable feature of its plumage.

It was a decided worry to be saddled with the responsibilities of rearing a fledgling of the recognized delicacy of the Lyre-bird. Fortunately, however, the problem solved itself. Within two days of being liberated in the scrub and ferns enclosed by the large Edward Green aviary the softly cheeping youngster was wholeheartedly adopted by the hen of the adult pair of "bush fire" Lyre-birds already in occupation.

"Lulu," as she is known, began a feverish all-day hunt for sufficient worms, grubs and seeds with which to satisfy the baby's prodigious appetite. Several chubby little Allied Rats, which formerly emerged undisturbed from dug-outs in hollow logs and from holes in the ground to join in the ration of bread crumbs and boiled egg, now became the immediate signal for a formidable display from the self-appointed "mother." Raising her wings and crest and uttering shrill cries of anger, she pursued the astonished and inoffensive native Rats from the proximity of her foster-child, as much as to say—"The idea of such a thing!"

When food was discovered at any distance from the young bird she stored it in her beak and throat-pouch and then approached the baby uttering soft and rather impatient grunts to draw its attention. Rarely was the youngster far away and he—which by now (February 23rd) has proved a correct forecast of sex—maintains soft yet insistent notes of request for more and yet more food. Even a momentary loss of contact with his "mother" causes an immediate raising of his voice to a loud single whistle that soon brings about the desired re-union.

In view of general observations on Lyre-birds the most interesting development in this case occurred some fourteen days after the youngster's arrival. Then "Larry," the male bird, appointed himself foster-father, and within several days had outclassed his mate in his attentiveness to the baby. He stored far more food

in his throat-pouch and uttered even more peremptory grunts to attract the young bird's attention. He fed not only the baby but "Lulu," his mate, as well. At the time of writing he has become so keen on his foraging duties that delay on my part in tipping out a tin of worms brings "Larry" perching on my knee or on the tin itself.

Variety is the key-note of the system employed by both foster-parents in their self-imposed day-long task. Worms are the prime articles of diet, but grubs, termites, canary-seed, crumbs and particles of hard-boiled egg are all thrust down the capacious throat.

"Lulu," the hen bird, is ever ready at the slightest cause for anxiety to utter that piercing alarm note indicative of the Lyre-bird clan.

Accidentally losing some of its characteristic plain tail-feathers before arriving at the Sanctuary, the young bird at the time of writing has a new bunch of feathers already a quarter grown, and interestingly enough there are several filmy plumes among them. This not only marks the youngster as a male bird but lends weight to the contention that the male bird gradually develops his mature tail from the period of the first moult. In this case a "moult" was forced on the young bird.

The adoption of the foster-child is also instructive in showing that the cock bird has a thoroughly well-developed paternal instinct, even though exceedingly few observed cases of male birds feeding young ones are known. It is thought that the awakening of the parental instinct in the Badger Creek adult birds should be a powerful incentive towards the later adoption of domestic responsibilities of their own.

GROWTH OF PLANTS

The innate tendency of plant stems to grow upward, as evidenced in all well-balanced trees, is particularly exemplified in the *Kniphofia*, and this susceptibility to the force in question is a matter of great interest which would well repay investigation by those of our members who are competent to make it. If the flower stem of this plant is laid horizontally, the flower will soon regain its upright position, bending at a spot close to the base of the flower, which is evidently strongly susceptible to the repulsive force, acting in opposition to gravity.—W.H.I.

BOOK ON FUNGI

The Committee of the Field Naturalists' Club is making arrangements for the publication of a book dealing with special features of Australian fungi. It is tentatively proposed that the price will be 2/6 a copy. Arrangements provide that the volume shall be thoroughly informative and illustrated with both colour and half-tone blocks.

PLATE XXII



Young Lyre-bird being fed by "foster father" in the Healesville Sanctuary.



Male Lyre-bird feeding young bird, with adult female in foreground.

Photos.: David Fleay.

AN ADDITION TO VICTORIAN ORCHIDS

By W. H. NICHOLLS, Melbourne

Prasophyllum densum, FitzGerald¹

A diminutive plant of compact habit, about 6-10 cm. high. Flowers numerous in a short, much crowded spike of 1.5-2 cm., light-brown to dark-brown with some green markings. Leaf-lamina terete, about 1-2 cm. long, in a more or less horizontal position and protruding from within the spike of flowers. Dorsal sepal ovate, cucullate over the column, with a short point; lateral sepals connate at the base, lanceolate, divergent—the sinus acute; concave on inner sides, about 4 mm. long. Petals lanceolate, much shorter and narrower than the lateral sepals. Labellum small, movable on a prominent claw, oblong with entire margins; obscurely ciliated towards the tip; tip recurved and very short; callous plate not markedly raised, smooth and channelled, occupying almost the whole surface of the lamina, even to the extreme tip. Column very short and broad, the appendages entire or more or less cleft at the apex. Anther incurved with a short point; stigma oval; pollinia 2, caudicle short. Tuber rather large, the remains of old tubers attached. *Note*.—The whole of the perianth segments, including the labellum often gland-tipped.

Flowering period: December to May.

Distribution: New South Wales; Victoria.

On April 4th I received from Mr. E. Nubling of Normanhurst (N.S.W.) specimens of a small *Prasophyllum* labelled tentatively by the sender, "*Pr. densiflorum*, *sp. nov.*" The locality of collecting was Normanhurst. Mr. Nubling writes: "They were growing in heavy clay in a clearing on the side of a hill just near the railway station. . . . About 20 specimens were seen."

The above specimens were almost identical with material collected on the upper reaches of the Moroka River, Mount Wellington plateau, Victoria, by Mr. D. Matthews, City Curator, Footscray, towards the end of December, 1937. However, the column wings of the Victorian flowers were just noticeably cleft at the summit, whereas the New South Wales flowers had definitely bifid or cleft appendages. R. D. FitzGerald, the author of *Pr. densum*, describes these appendages as being "blunt and undivided."

The present writer visited the Mount Wellington habitat in January, 1939, and very carefully examined the area for additional specimens of *Pr. densum*, but without success, though several other species—*Pr. Archeri*, Hk.f.; *Pr. despectans*, Hk.f.; and *Pr. flavum*, R.Br., which were in association during 1937—were again in evidence. Apparently the new addition to Victorian lists must be extremely rare in this locality. It is not so in New South Wales, for the collector (Mr. Nubling) reports it as occurring in the following places besides Normanhurst: National Park, Blue Mountains at Bell, Mt. Wilson (the original habitat of FitzGerald's specimens), Mt. King George, Mt. Victoria, etc.

Concerning the diverse nature of the column appendages, though some botanists consider these segments of considerable diagnostic

importance (in many instances rightly so), the present writer has on several occasions noted a great deal of variation in form. *Pr. Archeri*, Hk.f., occasionally has trifid tips to these features in lieu of the normal bifid ones, and *Pr. despectans*, Hk.f., sometimes shows a marked departure from the usual.

Concerning the latter case, Professor A. J. Ewart wrote: "In view of the amount of variation which seems to be shown in the lateral appendages of the column, it is questionable whether too much attention is not attached to them in classification."²

FitzGerald's type specimen (or specimens) of *Pr. densum* were not preserved for future workers, for, as is well-known, he destroyed his specimens after having completed the drawings. Moreover, there are no specimens of *Pr. densum* in any collection—as far as can be ascertained.

The only point of difference noted in the flowers of these recently-found specimens of *Pr. densum* not in agreement with FitzGerald's figures is the character of the column wings, the exact outline of which is at times most difficult to follow when such minute segments are concerned.

As before mentioned, the general appearance and definite character of the larger and most important features of these specimens are in keeping with those represented by FitzGerald as salient characteristics of the form established as *Pr. densum*.

1. *Aust. Orch.*, vol. 2, pt. 4. R. D. FitzGerald.
2. *Proc. Roy. Soc. Vic.*, 25 (N.S.), pt. 1 (1912), p. 112.

KEY TO FIGURES

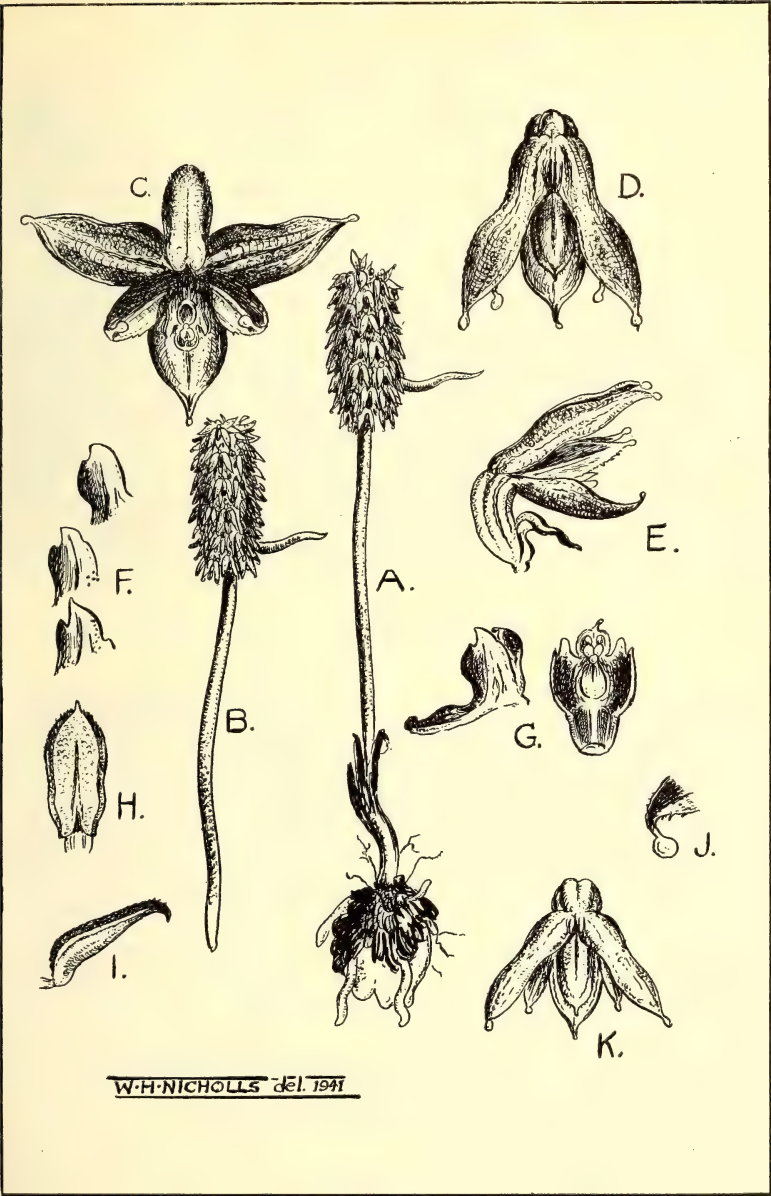
Prasophyllum densum, Fitz.

- Fig. A.—A specimen from Normanhurst (N.S.W.) (tuber attached).
 - Fig. B.—A specimen from Mt. Wellington (Vic.).
 - Fig. C.—A flower from front, perianth spread out (N.S.W. sp'm.).
 - Fig. D.—A flower from above (N.S.W. sp'm.).
 - Fig. E.—A flower from side (N.S.W. sp'm.).
 - Fig. F.—Column appendages—showing variations.
 - Fig. G.—Columns—from front and side.
 - Fig. H.—Labellum from front.
 - Fig. I.—Labellum from side.
 - Fig. J.—Segment tip with gland attached.
 - Fig. K.—A flower from above (Vic. sp'm.).
- (Figures A, B, natural size)

A WOMBAT ODDITY

A friend of mine recently informed me that some few years ago, whilst driving about eight miles south of Flowerdale, he came across a drove of wombats crossing the road. He had to pull up and wait some little while for them to cross before proceeding. Has any similar migration been noted?

W.H.I.



Prasophyllum densum Fitz.

ISLANDS OF THE ARAFURA SEA

By CHARLES BARRETT

(Summary of lecture given before the Field Naturalists' Club of Victoria, March 10, 1941)

Opportunity to visit little known islands lying off the coast of Arnhem Land isles of the Arafura Sea, came to us in August, 1939.

We owe much to our friend, the Rev. T. T. Webb, who, after fifteen years of service, recently retired from the leadership of the Methodist Mission in North Australia, for duties in the South. He is now again in Arnhem Land, completing studies of aboriginal dialects, folklore, and so forth. It was at his invitation that my wife and I made our memorable voyage in the Mission boat *Larrpan*, visiting many islands and spending weeks at Milingimbi, Crocodile Islands, as guests of Mr. and Mrs. Webb.

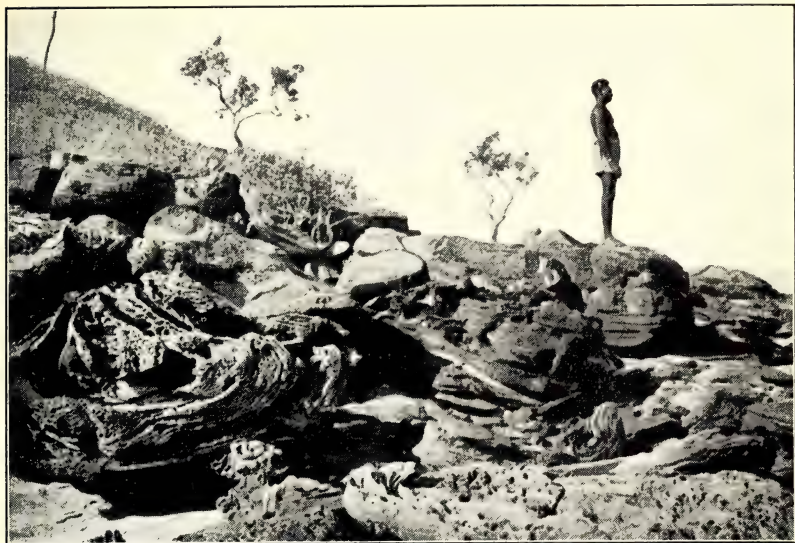
Welcomed at all the mission stations, we made friends of white folk and aborigines, too. We returned to Darwin, after nearly 1,300 miles of seafaring and long walkabouts on islands and the mainland, with abundance of natural history and ethnological specimens—and memories of things seen that were novel to us, and would be so to all but a few Australians.

For these islands strung along a coast of adventure, a wild and romantic untamed province of the Commonwealth, have rarely been visited by naturalists; indeed, the Wessels offered a field untilled even by the anthropologist. Strangely, all the expeditions to Arnhem Land seem to have neglected this group of islands; we were the first Europeans to see burial caves and caves where the rock is covered in aboriginal paintings some centuries old, others so recent that they represent pearling luggers and, in one case, a crew of Japanese. Our guide was a Wessel Islander, who led us over sand dunes and rocky country, and through dense tropical scrub to the age-old burial places of his tribe.

On North Wessel Island we met the aged headman and about twenty-six other islanders—almost a full muster of a rapidly-dwindling tribe. Nowhere, excepting round about mission stations, were aborigines numerous; on some of the eastern islands, fewer than a score were seen. On a walk across a corner of North-eastern Arnhem Land with two Yirrkala men as guides, I did not meet with another native; animal life, also, was scarce.

Mostly, we collected on Milingimbi, headquarters of the mission, where helpers were plentiful. Piccaninnies, both girls and boys, were eager to capture insects and spiders, lizards and other "small deer"; to gather land and marine shells, and bring in plants. Orchids were abundant, but the species were few. We heard of a terrestrial orchid, probably a *Thelymitra*, but failed to find it! An

PLATE XXIII



First photograph taken of this remarkable rock formation, on North Wessel Island.



Burial Cave on Wessel Island.

Photos.: Charles Barrett.

island a few miles out to the east of Melville Bay gave us photographs of an Osprey's nest, and a *Dendrobium*, which grew there in hundreds. A jungle near Yirrkala, site of the loneliest mission of Arnhem Land, yielded several kinds of land shells, two being undescribed; on the Wessels other new forms were collected—shells with affinities to Papuan species. On Elcho Island, a beautiful little tree frog lured us into a dismal paper-bark swamp. Three specimens were captured by the combined efforts of two missionaries and two field naturalists from the south. The frog, which has iridescent coloration and is scarcely the size of my thumbnail, apparently is new; our specimens were presented to the Australian Museum, Sydney.

Among birds observed on the island and the mainland were the Long-billed Shore-Plover or Beach Stone-Curlew (*Orthorhamphus magnirostris*), the Great Bower-Bird (*Chlamydera nuchalis*), the Scrub-Fowl (*Megapodius reinwardt*), the Reef-Heron (*Demigretta sacra*), the Great-billed Heron (*Ardea sumatrana*); parrots and cockatoos, honey-eaters, kingfishers, etc.

None of the many species met with gave us a keener pleasure, as bird observers, than the Great-billed Heron, which lives among dense mangroves along dark-watered, silent creeks. In a launch we travelled for miles up a creek in the vicinity of Yirrkala. Here *Ardea sumatrana* was at home. Bird after bird rose from its hidden perch, to fly heavily above the mangroves, as our boat chugged noisily along. I tried vainly to photograph one of the big, dark grayish-brown birds. Seeing them, for the first time, at least gave me the thrill of the naturalist's quest.

VISITORS TO THE BIRD BATH

Miss M. L. Wigan forwards the following extract from a letter from a friend at Riversleigh Station, Camooweal, North Queensland:

"I would love you to have seen the birds that came flocking in to the cement birds' bath we have here. The drought drove them in in thousands. Two beautiful varieties no one has ever seen before. They somewhat resembled Finches, with which they mingled, but unlike Finches they were not seed-eaters (insect-eaters, I think, as they frequented the garden). They did not hop either—another point unlike the Finch. In the *North Queensland Register* in two country district notes they were mentioned by correspondents. Both varieties had beautiful plumage. One kind had *very* bright scarlet breast and head, and brown back, a lot brighter hue than the blood finch. The others had bright yellow, almost orange, in place of the red; otherwise the size and habits were the same."

[The unidentified birds are the Scarlet Chat (*Epthianura tricolor*) and the Orange Chat (*E. aurifrons*). Both are inland species which may not be seen in particular areas for years and then suddenly appear in large numbers. Both appeared in parts of northern Victoria a few months ago. The Scarlet Chat does not seem to have been previously recorded in North Queensland.—EDITOR.]

PLATYPUSES TRANSFERRED TO KANGAROO
ISLAND

By DAVID FLEAY, B.Sc., Healesville

Twelve months ago the Fauna and Flora Board of South Australia sought permission from the Victorian Government to import for the purposes of liberation on Flinders Chase (Kangaroo Island) five pairs of Platypuses. In consideration of the worthwhile attempts which have been made to preserve native fauna on this South Australian Island and the suitability for Platypuses of three of its rivers, official permission was granted.

I undertook to capture and arrange the transport of the delicate little "Duckbills" from State to State.

The rivers concerned in this attempt at acclimatization are the Rocky, the Ravine and Breakneck creeks, all of which are excellent streams of permanent fresh water with a plentiful crustacean food supply.

The Watts River, the Graceburn River and Lake Yumbunga on Chum Creek, near Healesville, were selected as collecting grounds, and from February 7th to February 17th night-long efforts resulted in the capture of five pairs of Platypuses.

It is not the most cheerful of occupations to stand about in cold water and soft mud after the hour of midnight, particularly when several nights were unattended by any success.

A great deal of patience and stealth was necessary, for apart from a previous study of the dispositions of burrows the excursions of their inhabitants into nets and scoop traps depended on utter quietness.

Wariness in the method of handling the captured Platypuses was also essential in order to avoid possible spur-wounds. The actual capture of the Platypuses, which were purposely secured in two lots of five, was really only the beginning of our trials. The gluttonous little creatures had to be domiciled immediately in a half section of the Badger Creek Sanctuary's "platypussary"—the permanent home of "Jack," "Jill" and "Rebecca"—until the latest possible moment before the departure of the Transcontinental plane connecting with the Kangaroo Island plane early on the mornings of both February 11th and February 18th.

In the collective six nights of their temporary stay at Badger Creek the ten newcomers (all except two of which were young animals) ate approximately 7,000 worms and 250 land yabbies, which in view of the well-known fact that Platypuses very often fret and decline food in captivity, was a most gratifying response to altered conditions.

At the dark hour of 4 a.m. on February 11th and again at the same time on February 18th the Platypuses (a total of five in each

can) were taken from the "platypussary" and enclosed in ventilated cases packed with soft grass in which they could burrow and hide. Following a motor journey of forty-five miles to Essendon, they were taken on the A.N.A. plane which left at 7 a.m. for Adelaide.

As the big "Warana" roared into the sky on February 11th it struck me that this was probably the first occasion on which any of these famous little Monotremes—so thoroughly at home in the water and on the land—had ever "taken to the air."

Two and a half hours after leaving Essendon the precious cases were transhipped to the Kingscote (Kangaroo Island) plane standing at Parafield with her propellers ticking over. At Kingscote 'drome on both dates mentioned the Flinders Chase ranger met the plane with his car and before lunch on each day in question the Platypuses—not one of which was a whit the worse for its aerial experience—were liberated in waters over 600 miles from their original Victorian home streams.

I wonder what they think of it all!

DO MISTLETOES KILL THEIR HOSTS?

When we consider the frequency of occurrence of Mistletoes, the number of trees actually killed by them seems remarkably small; but with other causes acting adversely the Mistletoe may add to the difficulty of recovery by the tree. At Bairnsdale some years ago two box-trees close together were stripped of their foliage by large beetles. One, with very little Mistletoe, quickly made new growth. The other, carrying about fifty Mistletoe plants, not eaten by the beetles, was very slow in recovery and perhaps never reached its former condition, dying some time after.

On a road at Croydon there are now some dead Eucalypts with dead Mistletoes very evident. But two of the dead trees show no Mistletoe. Two others, from which bark has been removed, show extensive attack by insects which have worked under the bark: the considerable insect damage outruns the effect of their few Mistletoes. But others have more Mistletoe, though insects may also have contributed to the damage. Probably there is also another cause. The trees have all died recently, as they retain abundant small twigs and a few dry leaves and fruit.

The very wet conditions of the spring of 1939 must have affected root conditions and the dry period later would mean diminished growth, making the insect damage proportionately more serious. The Mistletoes, however, rob the branch on which they grow and often eventually kill it. In quantity they must affect the tree as a whole. Where excessively abundant, as is the case with *Loranthus quandang* on some Acacias near Healesville, the tree could scarcely survive unless something happened to the Mistletoe.

The Creeping Mistletoe, *Phrygilanthus eucalyptifolius*, spreads along the branches, or even the trunk of a tree, with many points of attachment. If pulled off it may send out new shoots at these points. It is not infrequent on many introduced trees, and is common on oaks at Bairnsdale with little apparent damage.

The effect on orchard trees will be likely to vary with different trees and different Mistletoes, and involves questions of productiveness and form as well as growth. Mistletoe may be seen on old suburban pears and almonds.

T.S.H

THE BREAKING-UP OF THE GENUS *CLEISOSTOMA*
(ORCHIDACEÆ) IN AUSTRALIA

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

In an illustrated article in the *Australian Orchid Review* for September, 1938, the present writer pointed out that while Blume's genus *Cleisostoma* was now generally discarded in botanical circles, we had been unable to follow this procedure in Australia until we could allocate the Australian species hitherto grouped under this name to their proper positions. The difficulty of doing this was accentuated by the fact that the various genera to which most exotic species of *Cleisostoma* had been removed, had no recognized Australian representatives: and adequate material for comparison appeared to be unprocurable.

Recently, however, I have had at my disposal for examination the valuable collection of New Guinea and Malayan epiphytes in the New South Wales National Herbarium, including many specimens collected by Schlechter and J. J. Smith. The Herbarium Library has provided further useful information; also, I am deeply indebted to the kindness of Dr. R. S. Rogers, of Adelaide, who sent me a translation in his own handwriting of J. J. Smith's treatment of *Sarcanthus* and allied genera in *Natuur. Tijdschr. Nederlansch-Ind.*, lxxii.

I have now reached certain conclusions in regard to all except two of the Australian plants concerned. Whether or not these conclusions will prove generally acceptable remains to be seen; but since it is obviously desirable that the proper status of all these orchids should be established as soon as possible, I make no apology for offering my solution of the problem.

The two species in regard to which I can offer no very definite opinion are *Cleisostoma Armitii* F. v. M. and *C. Nugentii* Bail. Of the former, I have seen only Mueller's rather brief description in *Fragm.* ix 49, and some figures drawn by Mr. W. H. Nicholls after inspecting the type (no other specimens appear to be known) in the Victorian National Herbarium. Mr. Nicholls's figures suggest a small *Saccolabium*, but I should not care to risk a definite pronouncement. The flowers are very minute.

Bailey (*Q. Fl.* v. p. 1555) observes of *C. Nugentii* that upon further examination it may have to be placed in the genus *Ornithochilus*; but whether in saying this he had in mind the Australian *O. Hillii* Benth., is uncertain. It is generally accepted that the latter is not a true *Ornithochilus*. Dr. Rogers informed me that the late Dr. Schlechter intended to make it the type of a new genus, to be named *Fitzgeraldiella*, which is No. 524 in Schlechter's *Systema Orchidacearum*, 88, July, 1926; but no record of his transfer of the Australian plant is known.

Ridley, in his *Flora of the Malay Peninsula*, included the genera *Sarcanthus* and *Cleisostoma* in *Saccolabium*. This procedure had previously been suggested by Hooker f., and it appears to have been temporarily adopted by Schlechter, who, however, subsequently restored *Sarcanthus*. The combination appears to have been unacceptable to the American botanists working in the Philippines; for Merrill (*Enum. Philipp. Plants*, p. 436) records seven species of *Sarcanthus*. The great Dutch botanist, J. J. Smith, definitely rejected it. The following quotation is taken from the translation by Dr. Rogers, mentioned above. After referring to Ridley's procedure, the author says:

"I have previously remarked (Fl. Buitenzorg., vi, 1907) that in my opinion the genus *Saccolabium* is composed of very heterogeneous elements, of which a few are genuine *Saccolabium*, and that it should therefore be split into several genera. Obviously, therefore, I cannot agree to the incorporation of *Sarcanthus* and *Cleisostoma* in *Saccolabium*. . . It is remarkable that we have always examined *Sarcanthus* Ldl. and *Cleisostoma* Bl. alongside of each other, although it is apparent, not only from the diagnoses of the genera, but also from the species which were included there in the first place, that they entirely cover each other. Since *Sarcanthus* Ldl. is the older, *Cleisostoma* Bl. must therefore be reduced to a synonym. Lindley and later authors described under *Cleisostoma* species which do not belong to Blume's genus *Cleisostoma*, but in my opinion constitute a separate genus for which *Pomatocalpa* Breda is the oldest name."

I am unable to identify any of our Australian species with *Pomatocalpa*; but it is abundantly clear, and is implied in J. J. Smith's own procedure, that orchids belonging to other genera have also, in the past, been placed in *Cleisostoma*.

Omitting, for the reasons given above, *C. Armitii* F. v. M. and *C. Nugentii* Bail., there remain nine Australian species which have in the course of time been included in Blume's genus, viz.:

1. *C. tridentatum* Ldl. (Queensland, New South Wales, and eastern Victoria.)
2. *C. erectum* Fitzg. (Lord Howe Island.)
3. *C. Beckleri* F. v. M. (N.S.W.)
4. *C. purpuratum* Rupp. (N.S.W.)
5. *C. MacPhersonii* F v. M. (N. Q'land.)
6. *C. brevilabre* F. v. M. (Q'land.)
7. *C. orbiculare* Rupp. (N. Q'land.)
8. *C. Keffordii* Bail. (N. Q'land.)
9. *C. congestum* Bail. (N. Q'land.)

I propose to remove the first five of these to the genus *Sarcanthus*; and the next two to the genus *Saccolabium*. No 8 has already been transferred by J. J. Smith to the genus *Camarotis*, and I do not think this decision is likely to be challenged. No. 9 is identical with the Malayan orchid named by H. M. Ridley *Dendrocolla alba*, which was removed by Schlechter to the genus *Thrixsper-*

mum. (See the *North Queensland Naturalist* for December, 1940.)

The nomenclature under these new combinations will be as follows:

1. *Sarcanthus tridentatus*.
2. *S. erectus*.
3. *S. Beckleri*.
4. *S. gemmatus*.*
5. *S. MacPhersonii*.
6. *Saccolabium brevilabre*.
7. *S. orbiculare*.
8. *Camarotis Keffordii*.
9. *Thrixspermum album*.

I have had some hesitation in placing Nos. 3 and 4 in *Sarcanthus*, because in both cases there is a *long column-foot*. This gives a different appearance to the flowers, and is not in strict accord with the generic character of *Sarcanthus* as presented by J. J. Smith (*loc. cit.*). But both species seem to me to fit very well into this genus in every other important feature, and I can find no other genus which would suitably accommodate them. It seems better, therefore, to place them in *Sarcanthus* rather than to create a new genus based solely on the length of the column-foot. They might perhaps form the nucleus of a section for which LONGIPES would be a suitable name.

1. *Sarcanthus tridentatus* (Ldl.) Rupp (*Cleisostoma tridentatum* Ldl. in Bot. Reg. 1938, Misc. 33. *Saccolabium calcaratum* F. v. M. in Fragm. i, 192. *Sarcochilus calcaratus* F. v. M. in Fragm. ii, 181, vii, 98. *Sarcochilus tridentatus* Rchb. f. in Walp. Ann. vi, 500: Benth. in Fl. Austr. vi, 296. Figured in Fitzg. Austr. Orch. i).—"Tangle Orchid" of the eastern States. In rain-forests, attaching itself to twigs and slender branches of trees and shrubs, often hanging by one or two roots, the others being tangled together in the air. Flowers fragrant.

2. *Sarcanthus erectus* (Fitzg.) Rupp (*Cleisostoma erectum* Fitzg. in Austr. Orch. i).—This species is confined to Lord Howe Island, a small dependency of New South Wales 450 miles N.E. of Sydney. It resembles the last in foliage, in its elongated stems, and in its numerous aerial roots, but is more robust. The flowers,

*No. 4 was originally described (*Vict. Nat.*, Dec., 1937) by me as *Cleisostoma gemmatum*. Subsequently, Mr. C. Schweinfurth, of Harvard, U.S.A., called my attention to the fact that this specific name had long before been appropriated by King and Pantling for a Malayan *Cleisostoma*: I therefore altered it (*Vict. Nat.*, April, 1938) to *purpuratum*. As the Malayan species has been transferred by J. J. Smith (*loc. cit.*) to the genus *Schoenorchis*, my original name may now be restored to the Australian plant.

also, are closely allied, but are smaller and more closely set in shorter racemes. The spur of the labellum is shorter. The habit of the plant is quite different. It attaches itself by its aerial roots to the flat surface of rocks and grows erect, the roots serving as "flying buttresses" to support the stems against winds.

3. *Sarcanthus Beckleri* (F. v. M.) Rupp (*Cleisostoma Beckleri* F. v. M. in Herb.: Benth. in Fl. Austr. vi, 296; figured in Fitzg. Austr. Orch. ii).—In Moore and Betcher's Handbook of the Flora of N.S.W., Fitzgerald, who described the Orchidaceæ, adopts Reichenbach's nomenclature for this and *S. tridentatus*, both being placed in *Sarcochilus*. In his own work on Australian Orchids, however, they appear as *Cleisostoma*. They do not seem to possess the generic characteristics of *Sarcochilus* in the structure and position of the labellum-spur. The present species has not been recorded outside N.S.W., where it is not uncommon in the rain-forests north of Sydney. It is a very diminutive plant, adhering by its roots to the bark of twigs, often over water. Flowers very small, greenish, intensely fragrant. Column-foot slightly longer than the labellum-spur.

4. *Sarcanthus gemmatus* Rupp. (*Cleisostoma gemmatum* Rupp (not of King and Pantling) in Vict. Nat., Dec., 1937, with illustration. *C. purpuratum* Rupp in Vict. Nat., April, 1938).—Closely related to the last, but the leaves generally more numerous and the root system definitely more aerial. Racemes more numerous. Labellum white; column and petals heavily stained with bright purple. In forests on the edge of the Dorrigo tableland, northern N.S.W.

5. *Sarcanthus MacPhersonii* (F. v. M.) Rupp (*Cleisostoma MacPhersonii* F. v. M. Herb.: Benth. Fl. Austr. vi, 297: Bail. Q'land. Fl. v, 1556. *Saccolabium MacPhersonii* F. v. M. in Fragm. vii, 96).—A relatively large plant with leaves up to 14 cm. long, but the stems comparatively short. Bailey remarks: "This has much the aspect of a small *Sarcanthus*, but the spur is not divided inside." On this point, however, J. J. Smith (*loc. cit.*) says that the septum of the spur is not a reliable feature of *Sarcanthus*, being often absent, and also occurring in other genera. On the other hand, the callus on the posterior wall at the base of the spur, which according to J. J. Smith provides a constant characteristic of *Sarcanthus*, is very prominent in this species. The flowers are relatively small, reddish or orange in colour. Habitat, rain-forests of N. Queensland.

6. *Saccolabium brevilabre* (F. v. M.) Rupp (*Cleisostoma brevilabre* F. v. M. in Fragm. xi, 87: Bail. Q'land. Fl., v, 1556. Figured in Austr. Orch. Review, September, 1938).—Similar to *Sarcanthus tridentatus* in habit, but more robust and the leaves closer set.

The mid-lobe of the labellum is extremely abbreviated; the side-lobes also are short, but very broad. Spur long, without any callus at the entrance. Habitat, chiefly N. Queensland; but occurring also about Noosa in the south.

7. *Saccolabium orbiculare* Rupp (*Cleisostoma orbiculare* Rupp in N. Q'land Nat., April, 1934, with illustrations. Figured also in Austr. Orch. Review, September, 1938).—A very small plant; flowers pale yellowish-green with a white labellum. Petals almost orbicular. Discovered in the Proserpine district of N. Queensland, and not yet on record elsewhere.

8. *Camarotis Keffordii* (Bail.) J. J. Sm. (*Cleisostoma Keffordii* Bail. in Report Q'land. Acclim. Soc., April, 1884; also Queensland Fl. v. 1556. Figured in Fitzg. Austr. Orch. ii). J. J. Smith (*loc. cit.*) remarks of *Camarotis*, "This genus may be most nearly related to *Sarcanthus*, but differs in the lip, which is hardly adnate to the base of the column, and has no appendage on the posterior wall, but a fairly large bifid callus on the anterior wall, and a very small middle lobe firmly pressed against the side-lobes. The spur seems to be two-celled in all species." *C. Keffordii* is a rather large epiphyte, the stems occasionally exceeding 90 cm. in length, with leaves 5-10 cm. long. The yellowish-white flowers are relatively small, fairly numerous in racemes 10-20 cm. long. The species is apparently confined to the rain-forests of N. Queensland.

9. *Thrixspermum album* (Ridl.) Schltr. (*Cleisostoma congestum* Bail. in Proc. Roy. Soc. Q'land xi: also Q'land Fl. v, 1555. *Dendrocolla alba* Ridl. in Flora of Malay Peninsula iv. 188. Figured in Austr. Orch. Review, Sept., 1938.) I have been unable to trace the publication in which Schlechter removed Ridley's species. In the N. Q'land Nat. for December, 1940, I have described how I identified Bailey's plant with a Sumatra specimen collected and labelled by Schlechter himself. Bailey's only locality is Cairns, in N. Queensland; and it is from Cairns that I have received specimens at various times from Dr. H. Flecker and Mr. G. Bates, the latter of whom collected them on trees at the Eubenangee Swamp between Cairns and Innisfail.

It will be noted that I have given references to illustrations of all these species except *Sarcanthus MacPhersonii*. The only illustration of this plant known to me is among Fitzgerald's unpublished plates in the Mitchell Library at Sydney.

MARANOA GARDENS

Members of the Field Naturalists' Club are invited to attend at the Maranoa Gardens, Balwyn, on Saturday, April 5, at 3.30 p.m., when a new plantation will be formally opened. The plantation has been prepared in honour of the late H. W. Watson, whose work was responsible for the founding of these splendid gardens of Australian flora.

Field Naturalists' Club of Victoria

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H. C. E. Stewart, J. H. Willis.

EXCURSION

EASTER HOLIDAYS.—The proposed excursion to Mornington has been cancelled. Instead, an excursion to Narbethong on Easter Monday, April 14, under the leadership of Mr. Chas. Barrett, C.M.Z.S., has been arranged.

As so few applications for seats in a Motor Coach have been received transport will be restricted to private cars. Members with cars who are willing to allow other members to occupy vacant seats are requested to communicate with the President, giving particulars.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

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THE JOURNAL AND MAGAZINE

of the

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MAY, 1941, TO APRIL, 1942



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Aug. 11—A Geologist's Ramble FREDERICK CHAPMAN
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The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, MAY 12, 1941

1. Minutes.
2. Subject for the Evening:
 "The Land of Wait Awhile."
 By Dr. Frank Tate.
 Illustrated by Motion Pictures.

3. Correspondence and Reports.

4. Election of Members.

AS ORDINARY MEMBERS.	PROPOSER.	SECONDER.
Miss Templer, National Gallery, Melbourne.	Mr. A. S. Kenyon.	Mr. L. W. Cooper.
Mr. R. R. Dodds, 5 Banchory Street, Essendon.	Mr. R. G. Painter.	Mr. W. H. Nicholls.
AS COUNTRY MEMBER.		
Mr. Allan C. Sonsee, Springmount, via Creswick, Victoria.	Mr. J. H. Willis.	Mr. C. L. Barrett.
AS ASSOCIATE MEMBERS.		
Miss Constance Purnell, Flat 3, 3 Henery Street, Hawthorn.	Miss E. L. Kearthland.	Mr. L. W. Cooper.
Miss G. F. Reeves, 83 Geelong Road, Footscray.	Miss M. A. Ball.	Mr. F. S. Colliver.
Miss E. Griffiths, 62 Geelong Road, Footscray.	Miss M. A. Ball.	Mr. F. S. Colliver.
Mr. Peter Hughes, 17 Alford Street, Brighton.	Mr. R. M. Withers.	Mr. L. W. Cooper.
Mr. R. B. Davies, 7 Boyanda Road, Glen Iris.	Mr. R. M. Withers.	Mr. L. W. Cooper.

5. Nominations for Membership.

6. General Business:

- (a) Forthcoming Excursions.
- (b) Questions by Members.

7. Nature Notes.

8. Remarks by Exhibitors.

9. Conversazione.

The Victorian Naturalist

Vol. LVIII.—No. 1

May 7, 1941

No. 689

The monthly meeting of the Club was held at the Club Rooms on Monday, April 7, 1941, at 8 p.m.. The President, Mr. L. W. Cooper, presided, and about 100 members and friends attended.

SUBJECT FOR THE EVENING

This was an illustrated lecture on "A Zoological Expedition to South America," given by Professor Agar. The main characteristics of the fauna were first described, then travelling adventures to Central Paraguay over the Grand Ghaco to a mission station from which the lecturer conducted his researches on the Lung Fish common in that area. Professor Agar also gave a series of interesting notes on the Indian tribes of the districts he passed through.

Discussion followed, after which the President expressed the members' enjoyment of the lecture, and the thanks of the Club was accorded to Professor Agar on the motion of Mr. G. Coghill, seconded by Mr. P. Crosbie Morrison.

At this stage Mr. F. S. Colliver showed a series of slides and photographs of the Queensland Lung Fish and its structure, fossil types and Australian fossil material, and of the recently discovered member of this group trawled off the West coast of Africa.

REPORTS OF EXCURSIONS

Mr. Morrison reported on the recent Millbrook Excursion, which approximately 30 members attended.

ELECTION OF MEMBERS

The following were duly elected as Ordinary Members of the Club:—Miss B. Williams and Miss W. Webster; and as Country members, Mr. Horace S. Stirton and Mr. Keith E. Ash.

EMINENT VISITOR

Mr. A. H. Chisholm introduced to the meeting Professor K. A. Wodzicki, of Poland, who was Professor of Animal Husbandry at the Warsaw University and a well-known ornithologist, being Chairman of the Polish Section of the Bird Preservation Congress. The President cordially welcomed Professor Wodzicki, who in reply gave an engrossing appreciation of the wartime spirit of Britain.

NATURE NOTES

Mr. Burley gave some notes on regeneration of the forest near Marysville, stating that the Mountain Ash was not doing well, but the other species were shooting.

Mr. Ivo Hammett stated that the well-known "Holy Bug" was common on Cassia bushes. Mr. French stated that it was also very common on the wattles, but that the Cassia was probably a new host record.

EXHIBITS

Miss G. E. Neighbour.—Two paintings of valuable hermaphrodite butterflies, *Papilio aegeus* (specimen in the National Museum, Melbourne, and painted by permission of Mr. John Clark), and *P. euphoriæ* (specimen in the Australian Museum and painted by permission of Dr. Waterhouse).

Mr. Morrison.—Specimens of the Ghost Bat (mummified) from guano deposits in Centralian Caves.

Mr. Ivo Hammett.—Specimens of Bohenia.

Mr. S. R. Mitchell.—Fighting and ceremonial axe, axe blank and finished blade from Chimbu, Mt. Hogan, Mandated Territory of New Guinea; also stone club heads and mortar from the Wagi Valley, Mandated Territory of New Guinea.

Mr. R. G. Painter.—Garden-grown native flora, including:—*Eucalyptus nutans*, *Brunonia australis*, *Melaleuca lakritæ*, *M. hypericifolia*, *Thomasia petalocalyx*, *Viola hederacea*, *Correa reflexa* (two types), *C. Lawrenciana*, *Pholida gibbifolia*, *Callistemon citrinus*. Also native specimen of *Beaufortia sparsa* from Kallista.

Mr. F. S. Colliver.—Teeth of two European Jurassic species of Lung Fish, also scales of the living Queensland form.

MARANOA GARDENS

A considerable number of members of the Field Naturalists' Club assembled at the Maranoa Gardens, Balwyn (Melbourne) on April 5, when a tablet was unveiled and a section of the gardens dedicated to the memory of the late J. M. Watson.

Mr. A. H. Chisholm, who unveiled the tablet at the invitation of the Committee controlling the gardens, pointed out that Mr. Watson was a pioneer cultivator of Australian plants and had established a very worthy collection on the spot. The area was acquired by the Camberwell Council, and the governing Committee, with Mr. Frederick Chapman as honorary curator, had developed the gardens to such an extent that they now contained 530 species of Australian and New Zealand plants. Mr. Chisholm paid a special tribute to Mr. Chapman's work, suggesting that he had in ten years built the gardens into the finest example of their kind anywhere. Such an area was the more precious because so much of our native bushland had been destroyed.

Mr. Watson's daughters represented the family at the function. The chairman was Cr. F. Le Leu.

PLATE I



Ghost Bat (*Macroderma gigas*). Mummified specimen from guano caves, Flinders Range, Central Australia.

Photo.: Crosbie Morrison.

DOES THE GHOST BAT STILL FLY?

By CROSBIE MORRISON, M.Sc., Melbourne

Some 60 years ago a strange bat was discovered on Mount Margaret, in the Wilson's River district of Queensland. It was described by Dobson in 1880 as *Megaderma gigas*, and the type specimen found its final resting-place, as so many Australian types have, in a German museum.

Typical members of the genus *Megaderma* are found in India, southern China, Malaya, and parts of Africa, and they are known as the false vampires because of the blood-sucking propensities of at least some members of the group.

The general characteristics are the enormous ears, united in the mid-line for the greater part of their length, the large forked tragus or fleshy outgrowth of the ear (probably possessing a very keen sense of touch or air pressure), the almost undeveloped tail, and, particularly, the markedly carnivorous type of dentition with huge canines and carnassial molars reminiscent of the cat and dog families.

A separate genus was erected by Miller in 1906 for the Australian species, based on the absence of the second pre-molar and the extreme development of the molars; the creature is now *Macroderma gigas*, of the small family *Megadermidae*.

Meanwhile, however, the species was found sparsely, in widely separated places. The second specimen was taken in 1890 at Alice Springs, Central Australia, and in 1894 the Horn Expedition took a single specimen in the McDonnell Ranges, near Alice Springs. Later, two specimens were sent from the same district to Baldwin Spencer by F. J. Gillen, and in 1900 Waite obtained a specimen from Pilbarra, W.A.

These are the only specimens recorded by Wood Jones in his "Mammals of South Australia," and further inquiries suggest that this unique bat has seldom, if ever, been seen alive since 1900. It would be wrong to infer that *Macroderma gigas* is extinct—the romantic re-discovery of the plains rat-kangaroo (*Caloprymnus campestris*) and of the broad-toothed rat (*Mastacomys*) a few years ago should warn us against hasty assumptions of that kind—but certainly the report of a fresh specimen, and especially of a living specimen, would be hailed with delight by zoologists.

Meanwhile, the dried specimens exhibited at the April meeting are of sufficient interest to warrant these few remarks on the species generally.

The two specimens shown, the better preserved of which is illustrated, were taken from a cave in the Flinders Range, Central Australia, where they were found mummified among an enormous accumulation of bat guano. They are the property of Mrs. Ron. Whyte, of the Depot Springs Station, North Flinders Range, and

were received on loan for photographing and describing through the kind offices of Mr. V. Hans Mincham, of Beltana, S.A. One may perhaps be permitted to express the hope that some day they will find their way into a permanent zoological collection.

The caves from which they were taken have been exploited for the guano they contain—semi-petrified droppings of generations of bats, accumulated through the centuries, for in the lower levels of the deposit the remains of the extinct marsupial lion (*Thylacoleo*) and of the marsupial wolf (known living only from Tasmania, and extinct on the mainland) have also been recovered. Some 70 tons of guano have been removed, according to Mr. Mincham, from this cave alone.

The special interest in the species lies in the fact that it is a bat-eating bat. Stomach contents of remains from the caves have been examined without revealing a trace of an insect or of any food other than smaller bats. These have been recognized readily by a microscopical examination of their fur, remaining undigested in the larger bat's stomach. To-day, very few smaller insectivorous bats are still seen in the caves, but they are very rare compared with the bat populations of those parts in other days.

This, in turn, bears witness to the comparatively recent climatic changes in the Central Australian region. Apparently in times that are at least geologically recent, this semi-desert region bore a flora which supported hosts of insects, which in turn provided food for thousands of small bats, and the small bats, in turn, supported a now vanished population of *Macroderma*.

The final stages of this change may, indeed, be more recent than most of us had imagined, for in his report on the Mammalia in the records of the Horn Expedition Baldwin Spencer paid comparatively little attention to his "haul" of three specimens. Unaware, apparently, that the original specimen had come from so far afield as Queensland, and not knowing, of course, that a specimen would soon be recorded from Western Australia, he wrote:—

It is very local in distribution, and, like many other forms in Central Australia, the numbers in which it occurs vary from season to season. Usually it is to be easily secured hiding during the daytime in a cave amongst the McDonnell Ranges, near to Alice Springs, but at the time of our visit this cave had been partially filled up, and the bats had taken refuge somewhere else, so that only a single specimen was obtained.

Later in the same work he comments, "At times they are met with in abundance in this locality, and are evidently confined to the central part of the continent."

Spencer also comments on the large number of smaller bats, *Nictophilus timoriensis*, seen flying in this region.

Wood Jones calls this the "Great Carnivorous Bat," but "Ghost Bat" is probably a better vernacular name for it. The most readily

noticeable feature of it is its colour—a general grey-white, with a pink tinge on the ears and nose-leaf when alive. Bats are exclusively nocturnal, and most of them are protected by their dark hues of black, brown, or dark grey. Only a few of the South American species approach the light colour of our Australian “ghost.”

It is hoped that these notes are not in the nature of a belated obituary notice of our most remarkable bat. On the contrary, should they lead to a further successful search for it they will have served their purpose well.

FIELD NOTES FROM NELSON*

By BLANCHE E. MILLER, Melbourne

We were agog with anticipation when on arrival at Nelson, early in the year, we were told that some “new” birds had recently been seen—birds quite unknown to residents of long standing. When it was stated that the birds were in small parties and “like little bantams,” the first thought was of the Black-tailed Native Hen *Tribonyx ventralis*. On the other hand, common sense—which is so often non-sense when applied to natural history experiences—warned us that the district was not within miles of the normal range of this bird. True, the drought years of 1892 brought them as far south as Geelong; and there is an exceedingly doubtful record in our own journal that they even reached Wilson’s Promontory.

A few days elapsed without the intriguing strangers being sighted. Then, late one afternoon, a few fowl-like birds were seen feeding on a grassy flat. When approached they unhurriedly walked into the adjacent scrub, after the manner of domestic poultry going to roost, but not before the field-glasses had revealed the rusty backs and very, very black tails of the Native-Hen.

There had been reports of the “little bantams” being seen near bushes of the African box-thorn. In some instances not only were the ripe berries eaten, but every green leaf was stripped off for more than two feet from ground level. Crumbs and cheese scattered in favoured feeding-places were readily taken. Various authorities attest that the Tasmanian representative of this genus has entirely lost the power of flight, and that the mainland species flies only when hard pressed. How, then, does it cover the many miles between its usual haunts and the far-distant localities that it visits in such numbers on occasions? Repeatedly we saw the Hens volplane from the hill to the grassy flat when apprehensive; and on several occasions they indulged in true flight, rising without effort above the scrub which was estimated to be not less than twenty feet in height.

The Black-tailed Native-Hen would be a decorative addition to any collection of fauna. It is dainty, possessing the finer points

*For a former article on “Bird Life at Nelson” see *Vic. Nat.*, Vol. LII, p. 193.

of the better-known Coots and other water-hens, while lacking their ungainliness. The slaty-blue breast and red legs contrast finely with the rusty-brown back, the pure white flank feathers being an uncommon ornament. In mature specimens the colour of the bill is remarkable; the upper mandible being yellowish-green, and the lower, blood-red.

Yet another rare visitor was the Red-kneed Dotterel, *Erythronys cinctus*. We are prone to accept the printed word as infallible, and to regard this Dotterel as a purely inland form, but it, also, makes periodic, if rare visits to the south. It is the Beau Brummel of the family; unmistakably dotterel-like, yet striking in deportment and livery. The leaden-coloured legs with the red knees (from which it gets its common name) seem to be longer, so that the bird appears to stand higher than its relatives. It possesses a certain sprightliness quite unlike the heavy appearance of others of its kind. Undoubtedly the prolonged drought had brought both these birds to within a stone's throw of the Southern Ocean.

As usual, the wading birds frequenting the sand-banks and river-margins were of considerable interest. Greenshanks, the "Silver Snipe" of sportsmen were more numerous this year. To ensure that the term "sanctuary" is interpreted in its widest sense, some restriction might be placed on the practice of boating parties, accompanied by dogs, allowing the animals to swim to the sand-banks and so disturb the birds. Even if it affords the unlooker an exceptional view, a playful dog can cause much consternation. Returning from an excursion along the old Portland Road, it was noticed that many of the grass-trees had not flowered this season. Many of the old flower-spikes with ripened seeds were broken off, or frayed, and on examination were found to be infested with the caterpillar of a wood-borer—a fact that numbers of Yellow-tailed Black Cockatoos had already discovered.

At a spring by the roadside a well has been sunk, and, because travellers are so absent-minded, the galvanized-iron bucket is securely attached by a chain. Unfortunately, someone had left a few inches of water in the bucket, in which a White-naped Honey-eater had met an untimely end. Its mate had managed to keep its bill above water, but its plumage was so waterlogged that it was unable to fly and must have eventually perished. First aid having been rendered with a dry towel, we had the satisfaction of seeing the feathered mite gradually restored to life and vigour.

A very wind-blown eucalypt in full flower attracted our notice, and, intent on nothing more important than securing some blossoms for decorative purposes, we found that to do so it would first be necessary to dislodge countless numbers of brightly-coloured and menacing wasps. Although we were not equipped with adequate means, several specimens were bottled and submitted to our fellow-

member, Mr. Chas. French, for determination. They proved to be *Guerinus guernii*, belonging to a family of flower-wasps with a fascinating life-history. These handsome fellows were all males, as the females are earth-bound, except during the nuptial flight. Tillyard states that this family, *Thynnidae*, is of "distinct economic importance, as it is one of the principal checks upon grass-grubs in Australia." Even the battered old guntree turned to be of interest; Baxter's stringybark, *Eucalyptus Baxteri*, with large flowers in clusters.

The collecting of an innocent bunch of small white everlasting, *Helichrysum Blandowskianum*, brought to light some of the woes of the pastoralist, when sheep feed upon this flower. Desiring verification, the matter was mentioned to a stock and station agent. His terse, thoroughly-Australian remark left no doubt that the impeachment of the woolly everlasting was no figment of the imagination. De-coded, it would seem that locally-bred sheep are immune, but to introduce stock from other districts is to court disaster. Loss of stock may be mitigated if remedial measures are adopted immediately. According to our *Census*, this species is confined to the north-west and south-west of the State.

Members of the Club will remember the recording of Silver Gulls nesting at Lake Corangamite. (*Victorian Naturalist*, Vol. L, p. 176.) Some years ago, Mr. V. H. Miller saw Silver Gulls nesting on the tops of tree stumps in a swamp at Mortlake. But the palm for a strange departure from custom must surely go to a pair of semi-tame Gulls at Mount Gambier; they built a nest on a house-top, in the gully between the chimney and the roof. Neither of the pair "belonged" to the house, and after the nest was built they became so aggressive that means had to be taken to evict them. The two nestlings were placed in a cage on the lawn, where the parent birds continued to feed them until they were sufficiently grown to be taken away.

Towards the end of January, three inches of rain in three days kept us prisoners, but when the weather cleared, what a new order of things was revealed! Ibis and Egrets waded where a few days previously it had been possible to walk dry-shod. Scarcely a dozen Black Swans of the scores that usually feed on the lower reaches of the river were to be seen; mostly they had found "pastures new" in newly filled swamps and lagoons. The Native Hens no longer fed on the grassy flat, for it, too, was under water. Locals predicted that the Bronze-wing Pigeons would nest again, and quoted having seen young birds in February last.

But, despite all the miracles that attend the breaking of the drought, the outstanding fact remained that our holiday had come to an end, and we must perforce wend our way citywards once more.

GERMINATION OF THE SEED OF MALLEE EUCALYPTS

By EDWARD E. PESCOTT. Melbourne.

Is the seed of the Mallee Eucalypts germinable? For many years claims have been made, in many quarters, that the seed does not germinate. Leading naturalists, engineers, and travellers—all experts in knowledge of the Mallee—positively assert that it is non-germinable. It is stated by these authorities that whenever alleged seedlings have been found it was always possible to trace the small roots right down to an old underground root, and that therefore all alleged seedlings are really sucker growths.

Correspondence on this question was recently invited from Mallee tree-lovers through the medium of a farmers' newspaper; and several replies followed which are very interesting.

From Hopetoun a farmer wrote:

I have transplanted over a hundred Mallee seedlings during the last few months. They have sent out new shoots since being transplanted, but are growing only slowly. These seedlings grew on a sandhill in drift sand, which had blown there during the last twelve months. Some of them were up to two chains from any tree, and there are probably still a hundred left.

From another Mallee town comes a second reply:

The Mallee grows from seed; it does not sucker, but the young plants are not often seen.

This writer tells of Mallee seedlings growing in the streets of Underbool.

A third writer (this time from Pinnaroo) says that as far back as 1908 he noticed that Mallee seedlings always followed a fire.

In 1921 [he adds] a small plain was flooded to a depth of 9 to 12 inches. A large number of seedlings followed, which grew well in a few years. Wherever there has been a fire along an old survey line, dense seedling growth took the place of the burned Mallee. Then later an advertisement was issued in a local paper, which offered Mallee seedlings for sale.

But what is probably more interesting and certainly more conclusive is the evidence of Dr. C. S. Sutton, one of our past-Presidents. Dr. Sutton is a well-established authority on Eucalypts, not only from an academic viewpoint, but also from a cultural one as well, for he raises many seedlings. In his garden at South Camberwell, Dr. Sutton, a year or two ago, sowed seeds of a considerable number of Eucalypt species, and was able to germinate eight species of Mallees. *Eucalyptus dumosa*, *E. leptophylla* and *E. oleosa* germinated freely, while a fair number of *E. gracilis*, *E. incrassata* and *E. polybractea* germinated, and a few seedlings of *E. uncinata* and *E. calycogona* appeared. South Camberwell cannot by any means be considered a Mallee area, and it is certain that none of these Mallee Eucalypt species ever grew naturally on the spot where Dr. Sutton prepared his seed-beds and grew his seedlings. So that it is definite that, given favourable circumstances and encouragement, the seed of Mallee Eucalypts will germinate, even as do the seeds of other species.

THE MOUNTAIN PLUM PINE OF GOONMIRK,
EAST GIPPSLAND

By W. HUNTER, Bairnsdale

The Mountain Plum Pine (*Podocarpus alpina*, R. Br.) occurs in East Gippsland, as far as is known, only in the vicinity of the Goonmirk Range, near Bendock, where it is remarkable for its unusual size and habit.

I have so far found it only in one place, on the north side of the east branch of the Delegete River, a few miles below its source, and a mile or two from the summit of the Goonmirk Range, with which this branch of the river runs nearly parallel. Here it is growing in abundance over an area of more than an acre, forming part of the dense shrubby "jungle" on a southerly slope shaded by large mountain grey gums.

It is a small tree rather than a shrub, attaining a height of 20 to 25 feet, with long spreading branches, and abundant, rather dark green foliage. Its normal growth is not gnarled or twisted at all. The main trunks of most of the trees are lying prostrate, the present upright stems being really original branches; but this is almost certainly due to the trees having been toppled over by the weight of snow that they would gather in a heavy snow-fall. The trunk attains a diameter of one foot at the base, and the bark is thin, somewhat papery, creamy-yellow with a reddish tinge. The rather narrow crowded leaves tend to spread horizontally or all facing in the same direction: the midrib is prominent on the under-surface.

The tree seems to be a favourite host for the lichen (*Sticta fossulata*), which forms large masses on the branches.

The figure of *Podocarpus alpina* in Ewart's *Handbook of Forest Trees for Victorian Foresters* (p. 49, Plate IX), is quite misleading as to the flowers. The male amenta (spikes) are narrow-cylindrical or linear, not ovoid as there depicted. The female amentum is either 2-ovuled, with an ovule borne well up on the inner surface of each terminal lobe, or 1-ovuled, with one lobe barren and considerably shorter than the fertile lobe. In the latter case, the lop-sided appearance is always noticeable, even in the ripe fruit. I have not seen any fruit with two seeds, although such fruits are known and may not be uncommon. The bright-red succulent stalk is rather similar in appearance to that of the cherry ballart.

My observations make me think that the flowers are probably dioecious; but as I have seen few flowers or fruits, and none at all on most of the trees which I have examined, this belief is not yet confirmed.

I express my thanks to the National Herbarium for the naming of specimens.



W.H.

Podocarpus alpina R.Br.: from Goonmirk, E. Gippsland.

1. Twig with leaves and a male amentum. (Natural size.)
2. Twig with leaves, seen from beneath, and a fruit. (Natural size.)
3. Male amentum.
4. Stamen.
5. Female amentum with two seeds; 5A, with one seed.
6. Fruit, showing one seed on the fleshy receptacle.

BREEDING THE WHIP-BIRD IN CAPTIVITY

By ARNOLD HIRST, Sydney

The following notes refer to the breeding and rearing of the Whip-bird (*Psophodes olivaceus*) from a pair obtained from Mr. Smith, of Brisbane, in November, 1938.

During the breeding season August to February of 1939 three nests were built. The site selected in each instance was among dead tea-tree, which is placed under cover of an open shelter in an aviary approximately 133 square yards in area with a mean height of from 7 to 8 feet. The elevation of the nests, which are cup-shaped in design and composed of loosely woven roots and twigs, varied from 6 to 8 feet from the ground.

Two eggs, light blue in colour with black and lavender spots, were laid on both the first and second occasions of nesting, but owing to the inaccessibility of the third nest, which was placed immediately below the roof of the shelter, a record of its content could not be obtained. Assuming, therefore, that it also contained the usual number of eggs, all but one were duly hatched, although only one chick—which came from the third nest—survived beyond the first week.

When first discovered the young bird was well covered with dull-black downy feathers, and was capable of short flight. The crest was well defined, but no evidence of the tail feathers appeared until about the second or third week.

The period of incubation, according to my observations of the first and second broods, was fourteen days, but for the reason stated I am unable to say what period elapsed between the hatching and the time that the young bird left the nest.

The feeding of the fledgling was carried out by both parent birds in the manner of all insectivorous birds, but continued by the female long after the young one had become independent.

It would appear that live food is essential to the life of the nestlings, particularly during the first fortnight of their existence, and I attribute the loss of the first two broods to the fact that the right food was not available in sufficient quantity to meet the needs of more than one nestling at a time. In the feeding of the adult birds an abundant supply of live food is not such a vital factor, as I find that added to what insects they are able to discover on the ground—which is liberally covered with leaf-mould—they are maintained in perfect condition on a diet of fresh finely-minced raw meat, in addition to soft-bill food.

My observations indicate that the Whip-bird is naturally shy, but its confidence is not difficult to gain, and it may with patience be brought almost to "finger tameness."

UNUSUAL GROWTH IN FERNS

By N. A. WAKEFIELD, Genoa.

In the *Victorian Naturalist* of August, 1940 (Vol. LVII, p. 84), Mr. A. J. Tadgell published a note referring to an unusual plant of the Screw Fern (*Lindsaya linearis*) with a bifurcate frond. Similar examples have been noticed by the writer in many ferns, and others probably occur in most species.

Where the branching is of isolated occurrence the specimen can be put down at once as a freak form, primarily caused by the accidental division, in the formation of that part of the plant, of one of the cells which would normally have stayed undivided.

Occasionally a bifid pinnule has been noted on a frond of the Slender Tree Fern (*Cyathea Cunninghamii*) at Mount Drummer; but in most cases tree ferns are not affected in this way. Amongst some Screw Ferns at the Wingan River, one sterile and one fertile frond, each bifid above the middle, were noted; and at Graytown a few fronds of Rock Fern (*Cheilanthes tenuifolia*) were forked above the middle.

Sometimes a stem is forked and produces two fronds, as in specimens of Shiny Shield Fern (*Dryopteris decomposita*) from Orbost, and in the Soft Shield Fern (*D. Dentata*) at Gloucester, in New South Wales. As well as this, the Shiny Shield Fern frequently has a double tip to the frond or one of the pinnae; and in East Gippsland single bifid fronds have been collected from the Fishbone Fern (*Blechnum discolor*), and from the Finger Fern (*Polypodium Billardieri*).

The Rasp Ferns often grow abnormally, as illustrated by a frond of the Small Rasp Fern (*Doodia caudata*) with a double terminal pinnule, from Combienbar; and by several bifid fronds of the Common Rasp Fern (*D. media*) at Orbost. At Comarty Creek, south of Stroud, in New South Wales, some fronds of the Prickly Rasp Fern (*D. aspera*) were once or twice branched.

In our larger genera, freak branching has not been noticed in any Bracken Ferns (*Pteris*, etc.), Fan or Coral Ferns (*Gleichenia*), Filmy or Bristle Ferns (*Hymenophyllaceae*), Maidenhair Ferns (*Adiantum*) or Spleenworts (*Asplenium*); and it has been seen only very rarely in *Blechnum* and *Polypodium*. It seems to occur to the greatest extent in Shield Ferns (excluding *Polystichum*), and in Rasp Ferns.

At Comarty Creek many plants of the Prickly Shield Fern had doubly pinnatifid fronds such as those so well known in the Fishbone Fern (var. *bipinnatifidum*). This state in these two species illustrates a further unusual type of variation to be noted in some ferns. It is a luxuriant growth due to a more than normal abundance of water and food material, and hence is to be seen only in the largest specimens.

In rich soil by Cann River the Sickie Fern (*Pellaea falcata*) is often somewhat branched; and on the bank of the Upper Combi-bar River, fronds have been collected with lobed pinnules, and the main rhachis branched into as many as seven tips. In a spot near the Genoa River, there is a most beautiful form of the Common Maidenhair Fern (*A. aethiopicum*), which has a dense mass of pinnules in place of the normal one at the end of each pinna.

Both the Kangaroo Fern (*Polypodium diversifolium*) and its rarer East Gippsland relative (*P. pustulatum*) often have the lobes of the fronds each divided into several pointed tips. At Genoa Peak, *Cyclophorus serpens* is sometimes lobed like the Kangaroo Fern; and at Kallista many King Ferns (*Todea barbara*) have the ends of the primary pinnae forked into several tips.

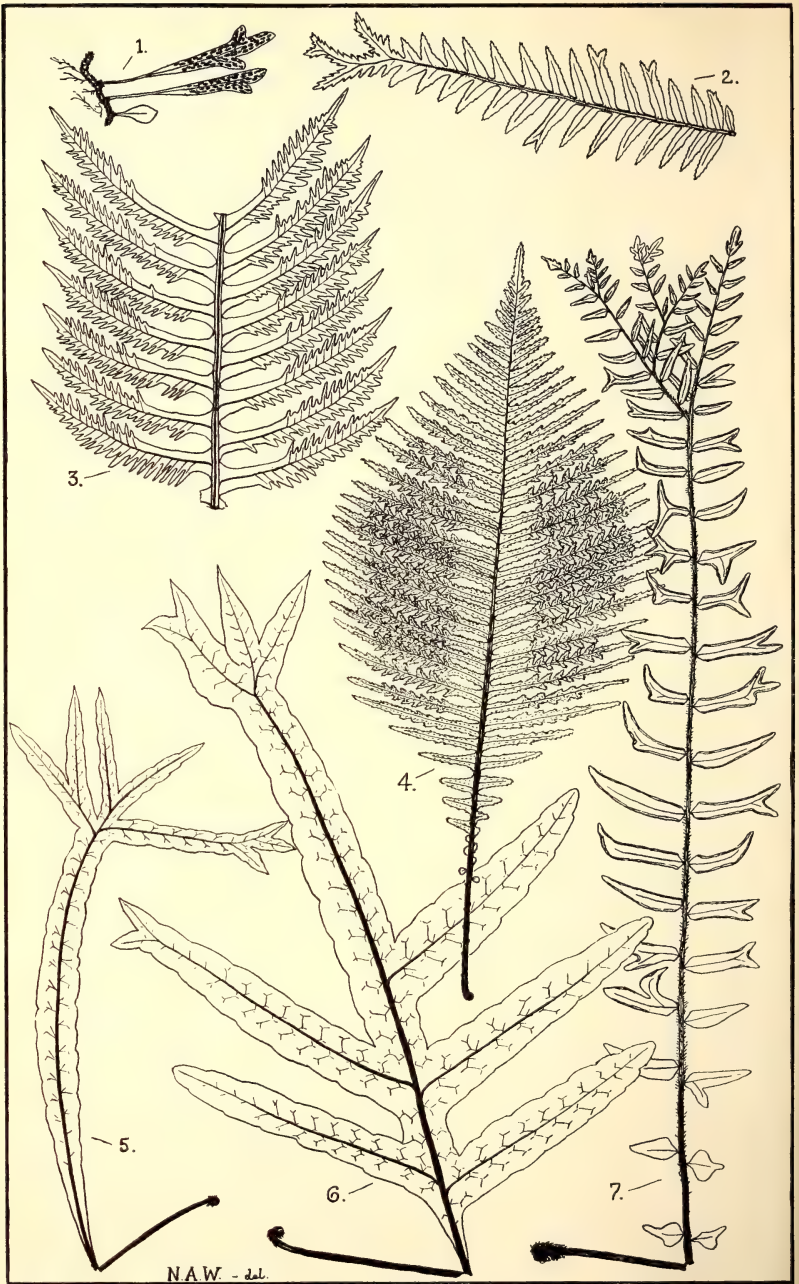
The state of luxuriant growth is distinguished from purely freak forms by the branching occurring in most corresponding parts of each of several plants in the one locality. As such forms may occur in very favourable conditions, illustrations have been prepared of the variations which have been noticed by the writer.

There was one fern, on an open flat by the Thurra River, which defied explanation; it was a Soft Tree-fern (*Dicksonia antarctica*) with a trunk four feet high, and of about the same thickness, the whole top of which was covered with innumerable growing points, subtending altogether some hundreds of fronds so closely packed that close examination was impossible. Under normal conditions each of our common tree-ferns will sometimes produce branched trunks with as many as half-a-dozen heads; but the Thurra River fern was certainly "one out of the box."

A few fern species have the unusual character of producing young plants, often referred to as bulbils, vegetatively on the fronds. The Mother Spleenwort (*A. bulbiferum*) owes both its popular and scientific name to this feature, for it often produces dozens of fast-growing young plants, each springing from near the tip of the main rhachis or one of its primary branches. For this reason the species is known as the "Hen and Chicken Fern" in parts of northern New South Wales.

The Common Shield Fern (*Polystichum aculeatum*) often shows a single large bulbil near the end of the rhachis; and the Necklace Fern (*Asplenium flabellifolium*) in some cases has a growing plant at the end of the threadlike tip of the frond. In each of these three species the bulbils grow into normal plants when their parent fronds wither and lower them to the ground. The proliferous habit occurs only where there is an abundance of moisture in the air; and hence is most frequent in the areas of rather high rainfall.

(The names of some of the species above mentioned have been revised recently, and some are under question at the present; so,



For Key, see page 15.

to avoid confusion, the names used in Ewart's "Flora of Victoria" have been adopted here, except where the changes have been published in more recent Victorian literature.)

Key to Illustrations :

- Fig. 1. A lobed form of *Cyclophorus serpens*.
- Fig. 2. A forked pinna of *Todea barbara*.
- Fig. 3. Section of a bipinnatifid frond of *Blechnum discolor*.
- Fig. 4. A bipinnatifid frond of *Doodia aspera*.
- Fig. 5. A forked frond of *Polypodium pustulatum*.
- Fig. 6. A forked frond of *Polypodium diversifolium*.
- Fig. 7. A branched frond of *Pellaea falcata*.

All drawings are $\frac{1}{4}$ natural size.

THE LATE MRS. E. H. PELLOE

The Melbourne press announced about the middle of last month the sudden death in Perth of Mrs. Emily H. Pelloe, so widely known to Australian naturalists as the author of that beautiful and useful book, "Wildflowers of Western Australia." Mrs. Pelloe's husband was a bank manager, and they lived in a lovely home opposite the King's Park, where grows, in nature, a most wonderful collection of Western wildflowers.

Mrs. Pelloe was a great flower lover with an excellent botanical bent. She had been a help and an inspiration to every native plant lover of recent times in the West. In 1921 she published her wildflower book, which is a gem among Australian botanical works. It was published by the late C. J. De Garis, and had a varied career. It is now scarce and valuable. No better illustrations of the Scarlet-flowering Gum, *Eucalyptus ficifolia*, and of the Christmas bush, *Nuytsia floribunda*, have ever been published than those among other colour prints in her book. The many line drawings, too, are excellent.

Mrs. Pelloe was a delightful water-colourist, and her collection of paintings of native flowers was very extensive. She would always put aside any other interest, as she did for me in 1926, to show her fine collection of paintings. It is to be hoped that the flower portraits will be acquired by the Western Australian Government.

In 1929 Mrs. Pelloe issued a long and valuable article entitled "Floral Glory" in the Western Australian Centenary volume. This was illustrated by several of her colour pictures and line drawings. In 1930 the book, "West Australian Orchids" was issued—a most useful work. The book was also illustrated in colour and with line drawings. Between these times Mrs. Pelloe published many articles in journals and newspapers.

Altogether, she will be greatly missed in the botanical world. Her help was given in such a happy and willing way, that one could always go back again with pleasure and confidence. Her work will live for a very long time, as will the memory of her charming personality.—E. E. Pescott.

Members of the Field Naturalists' Club have tendered warm sympathy with Cr. F. Le Leu, of Camberwell, on the death of his wife. Mrs. Le Leu was taken ill at the Maranoa Gardens function on April 5 (at which her husband presided), and she died a few days later.

TUNA IN AUSTRALIAN WATERS

In view of the known presence of enormous shoals of food fishes around the coast of Australia, and the apparently contradictory fact that fish is a comparatively rare and expensive item in the average Australian's diet, it does not require a particularly vigorous exercise of faith to believe that the Commonwealth Fisheries Research, instituted a few years ago, is destined to have important results on the economic side of Australian fisheries.

It is interesting to observe, however, that the Fisheries Division of the Council for Scientific and Industrial research has also produced already some scientific results of considerable importance. For example, when the Southern Bluefin was reported in a shoal off Adelaide in 1934 it was announced that it was 40 years since similar fish had been reported off the South Australian coast. Also McCulloch, in his "Fish and Fish-like Animals of New South Wales," remarked that the only record of the Striped Tuna from New South Wales waters was "unsatisfactory."

Since the Division's research vessel *Warreen* has been operating off the Australian coast, it has been established that both these fish are regularly present, and abundant, in the waters mentioned. Both fishes are varieties of tuna, a fish that was practically unknown to Australian diners a few years ago. And when it was introduced to the table the diners were disappointed, because the tuna is not a good pan fish. On the other hand, as a fish for canning it excels the finest salmon in delicacy, and has at times brought double the price of salmon on the American market.

Papers by the chief of the Division (Dr. Harold Thompson) and Dr. D. L. Serventy at the Canberra meeting of the Australian and New Zealand Association for the Advancement of Science, in January, 1939, brought the tuna to public notice. The content of those papers, together with certain other information about the nine Australian species of tuna, has been published now as Pamphlet No. 104 of the Council for Scientific and Industrial Research, "The Australian Tunas," by D. L. Serventy, B.Sc., Ph.D.

The pamphlet is of considerable interest to anyone who may be interested in marine biology, and is written with a minimum of scientific terminology, so that it may be of value to the "practical man" and the seeker after general knowledge, as well as to the scientist. The economics of tuna fisheries abroad (and especially in the United States), the methods employed in commercial fisheries, descriptions of the individual species, and a useful key for rapid identification are all worth-while features. An appendix describes the methods of processing for canning.

The pamphlet is attractively illustrated, and while the publishers express some regret that war-time stringency has forced them to the photolithographic process of printing direct from type-script, they may take some comfort from the fact that this process has reproduced the many line-drawings more attractively than would have been done by letterpress printing. Dr. Serventy, and the Division, are to be congratulated upon such an excellent and informative report.

The pamphlet is available gratis to those interested, on application to the Council for Scientific and Industrial Research, Albert Street, East Melbourne. —P.C.M.

CABBAGE BUTTERFLY'S RAVAGES

Following is a list of plants known to have been attacked in Australia by the cabbage butterfly:—Cabbage, cauliflower, ferns (*Gleichenia*), zinnia, horse radish, mignonette, *Thumbergia Gibsoni*, mustard cress, radish, turnip, rhubarb, stocks, nasturtium, asters, cinerarias, petunias, fuchsia, hoary cress.

Mr. J. Clark (Entomologist at the National Museum) kindly furnished me with some of the above names of plants attacked by the larvæ of this butterfly.

C. FRENCH.

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EXCURSION

SATURDAY, MAY 17.—Burnley Gardens. Leader: Mr. R. T. M. Pescott, B.Agr.Sc. Subjects: Entomology and Agriculture. Meet at the Entrance Gates at 2.45 p.m. Burwood and Wattle Park trams from Batman Avenue pass the gates. The terminus of the Hawthorn tram (running along Flinders Street) is about two hundred yards from the gates.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

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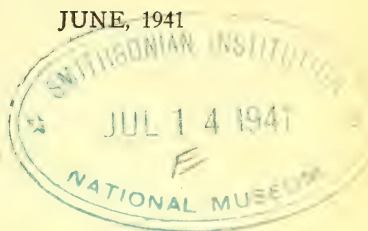
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Vol. LVIII, No. 2



JUNE, 1941



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
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BUSINESS PAPER FOR ANNUAL MEETING

MONDAY, JUNE 9, 1941

1. Minutes.
2. Correspondence and Reports.

3. Election of Members.

AS ORDINARY MEMBER	PROPOSER.	SECONDER.
Mr. Ros Garnet, C/o Serum Laboratories, Royal Park.	Mr. H. T. Reeves.	Mr. Geo. Lyell.

AS ASSOCIATE MEMBERS

Miss Molly Herring, "Doiran," Walsh Street, South Yarra.	Mr. P. Crosbie Morrison.	Mr. L. W. Cooper.
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Miss Judy Herring, "Doiran," Walsh Street, South Yarra.	Mr. P. Crosbie Morrison.	Mr. L. W. Cooper.
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4. Nominations for Membership.
5. Annual Report and Balance Sheet.
6. Election of Office-Bearers, 1941-42.
7. General Business:
 - (a) New Excursion List.
 - (b) Forthcoming Excursions.
8. Nature Notes.
9. Remarks by Exhibitors.
10. Presidential Address:

"The Value of Plants to Man."
By Mr. L. W. Cooper.
11. Conversazione.

The Victorian Naturalist

Vol. LVIII.—No. 2

June 4, 1941

No. 690

PROCEEDINGS

The monthly meeting of the Club was held on Monday, May 12, 1941. The President, Mr. L. W. Cooper, presided, and about 120 members and friends attended.

SUBJECT FOR THE EVENING

This was a motion picture entitled "The Land of Wait Awhile," shown by Dr. Frank Tate, with a running commentary by Dr. O'Sullivan. The Roper River district was the area mainly dealt with by this film. Scenery and native life were featured. Of particular interest were photographs showing the splendid types of natives and their perfect teeth, as well as some of their dances, one unique section dealing with a women's corroboree.

Dr. Tate answered a number of questions at the end of the film, and he and Dr. O'Sullivan were cordially thanked, on the motion of Mr. C. L. Barrett and Mr. F. S. Colliver.

ELECTION OF MEMBERS

The following were duly elected:—As Ordinary Members, Miss Templer, Mr. R. R. Dodds; as Country Member, Mr. Allen C. Sonsee; as Associate Members, Miss Constance Purnell, Miss G. F. Reeves, Miss E. Griffiths, Mr. Peter Hughes and Mr. R. B. Davies.

ELECTION OF AUDITORS

The retiring auditors, Messrs. A. S. Chalk and A. G. Hooke, were re-elected.

NOMINATIONS FOR OFFICERS

President: Mr. P. Crosbie Morrison.

Vice-Presidents: Messrs. G. Coghill, Ivo Hammet, H. P. Dickens, E. S. Hanks, Noel Lothian.

Editor: Mr. A. H. Chisholm.

Secretary: Mr. F. S. Colliver.

Assistant Secretary: Mr. G. N. Hyam.

Treasurer: Mr. J. Ingram.

Librarian: Dr. C. S. Sutton.

Assistant Librarian: Mr. W. H. Ingram.

Committee: Mrs. C. L. Barrett, Messrs. C. L. Barrett, A. S. Chalk, J. H. Willis, H. C. E. Stewart, S. R. Mitchell, R. Lamparter, R. W. Armitage.

JUL 10 1941

NATURE NOTES

Germination of Mallee.—Mr. E. E. Pescott (for Miss Margaret Saville) stated that she had germinated the Green Mallee (*E. viridis*). Mr. Noel Lothian stated that seeds of Green Mallee which he had taken to England had germinated there.

Variegation in Native Flora.—Mr. Lothian stated he had several records of variegation in native plants, and asked members' co-operation in adding to this list of species.

Koala on Sperm Whale Head.—Mr. A. D. Hardy reported that in January, 1938, a lonely Koala appeared on Sperm Whale Head, and shortly afterwards disappeared. The question was, how did the animal traverse the five miles of barren country between the Head and the mainland?

Striped Marsupial in North Queensland.—Mr. F. S. Colliver stated that a recent letter from Dr. H. Flecker, of Cairns (Queensland) contained news of this animal having recently been seen again. Mr. C. L. Barrett stated there were several records of such an animal, and he believed that a striped marsupial did exist in North Queensland.

Rosellas and Lyre-birds.—Mr. H. C. E. Stewart stated that at Sherbrooke Forest recently he had noted five Crimson Rosellas feeding on immature fern shoots in Lyre-bird tracks, and he asked if these two birds assisted each other in any way.

Black Possum in City Area.—Mr. V. H. Miller reported having recently seen a dead Black Possum in St. Kilda Road near the Police Barracks, and asked if it was often seen in the City area. Mr. Barrett stated that he had several records of the Black Possum having occurred in the City and nearer suburbs.

Unusual Plant Forms.—Mr. R. G. Painter reported that he had at Box Hill a plant of *Eucalyptus citriodora* with drooping branches, and also a plant of *Epacris impressa* showing three flower-heads. Mr. E. E. Pescott stated that this would be the first record of the drooping habit in *E. citriodora*.

EXHIBITS

Miss Wigan:—Bushy Club moss (*Lycopodium densum*) first collected at the mouth of the Derwent River, Tasmania, by Labillardiere in 1797. This present specimen was collected on April 15, 1941, in the Bemm River district, and the largest specimen is 28 ins. long by 8 ins. broad. Also Wombat Berry (*Eustrephus latifolia*) from Bemm River; collected May 13, 1941.

Mr. H. P. Dickins:—Hand-coloured prints of Victorian orchids.

Mr. R. G. Painter:—Native plants, including *Callistemon citrinus*, *C. paludosus*, *Correa reflexa*, *Eucalyptus nutans*, *Nicotiana Flindersiensis* (natural hybrid), *Melaleuca thymifolia*, *Viola hederacea*, *Crotalaria laburnifolia*, *Banksia collina*. Also *Eucalyptus*

Stricklandi showing denudation of leaves by larvae of the emperor gum moth.

Mr. R. W. Armitage:—Anchor Plant (*Colletia cruciata*) in bloom; a native of Southern Brazil and Uruguay.

Mr. C. J. Gabriel:—Carrier shells from various localities—*Xenophora conchyliophora*, West Indies; *X. calculifera*, Reeve, China; *X. solaris*, Reeve, China; *X. pallidula*, Reeve, Japan; *X. solariodes*, Reeve, Queensland.

GENERAL BUSINESS

Subscription Lists.—The following Committee decision was announced by the President:—"That members be informed that in future no donations are to be solicited nor subscription lists of any kind circulated among Club members within the Club without the permission of the Committee."

MORE AUSTRALIAN SHELLFISH

Molluscs of South Australia: Part 2—Scaphopoda, Cephalopoda, Aplacophora, and Crepidopoda, by Bernard C. Cotton, conchologist, and Frank K. Godfrey, hon. assistant conchologist, South Australian Museum, has been received for notice and added to the Club's library.

This volume has been eagerly awaited by those who have found Part 1, covering the bivalve shells, so useful for identification and comparative work, and now the final section, Part 3, dealing with the gastropods, will be awaited just as eagerly. The joint authors have made many noteworthy contributions to Australian conchology, but this may be taken as their crowning effort. All the known species recorded from South Australia are described and keyed, and most of them are figured also, and as the marine molluscan fauna of South Australia differs very little from that of Victoria, the work will be as valuable to Victorian workers as it will be to those in the neighbouring State. Also, a number of species not actually recorded from South Australia, but recorded from other Australian shores, have been included. It is interesting to note in passing that the authors have reverted to the name *Crepidopoda*, in place of *Loricata* or *Polyplacophora*, for the Chiton or mail-shell group.

The new volume worthily upholds the reputation of this extremely valuable South Australian fauna and flora series, which have been in all cases the best, and in many instances the only, collected accounts of important Australian groups of fauna and flora.

THE MALLEE EUCALYPT

With reference to the article by Mr. E. E. Pescott in the May issue of the *Victorian Naturalist* on the germination of the seed of the Mallee Eucalypt, it may interest members to know that in 1936 an employee of the Country Roads Board planted a small quantity of seeds of *Euc. viridis*, *E. dumosa* and *E. gracilis*. These, it is understood, germinated well, and in the following autumn some 30 seedlings were planted out, some on the Geelong road one mile south of Werribee and some on the Ballarat road between Rockbank and Melton. They are now 3 to 4 feet in height and appear to be thriving.

MARGARET SAVILL.

THE WATER RAT IN VICTORIA

By F. LEWIS, Chief Inspector of Fisheries and Game

Water rat skins to 124/- per dozen! Such was the published price of these skins in Melbourne daily papers recently—10/4 for a few square inches of water rat skin! It seems an extraordinary price to pay, and one hesitates to think what the cost of a lady's coat made of these skins would be. It would probably take nine or ten dozen skins to make such a coat.

Recently, the Commonwealth authorities prohibited the importation of all furred skins in order to save foreign exchange and shipping space. The American musk rat (or "musquash," to give it its Indian name), heads the list of fur-bearers in the United States. Many thousands of these skins have been imported into Australia, where they are also very popular. The prohibition of their importation is probably responsible, to some extent at any rate, for the present high value of Australian water rat skins, although the value of these has been rising for some years past.

The natural colour of the Australian water rat skin is very beautiful, but the colouring is so irregular that to match sufficient skins for one coat would require going over many hundreds, perhaps thousands. Therefore, the skins are all dyed either brown or black before being made up.

As far back as 1931, when water rat skins had reached the hitherto unheard price of 4/- each, the Fisheries and Game Department was becoming increasingly alarmed at the possible extinction of this valuable fur-bearer. It was decided, therefore, to send a questionnaire to trappers all over the State regarding its status. Information was sought as to whether water rats were increasing or decreasing, their feeding and breeding habits, and the usual methods of capture.

Reports received from all districts of the State numbered 162, and furnished much valuable information.

It appeared that in 72 districts the animals were decreasing; in 44 they were apparently increasing, while in 46 the numbers were about stationary.

Rabbit-traps were the most popular method of capture, being baited with fat (melted on to the plate of the trap), fish, meat and other things. Poison seems to be increasingly used and is very deadly in its effects by wiping out a whole colony. Its use may have to be prohibited.

Breeding takes place in the spring and early summer, and the usual litter appears to be from three to five, although examples of seven were noted.

As a result of this inquiry water rats are now protected in Victoria from 1st August to 30th April following, but Victoria is the only State that has seen fit to take such action. It would

seem desirable, if this animal is to be preserved, for all the States to afford it some protection, at least during the spring and summer months.

The draining of swamps and clearing of the country resulting from the spread of settlement would seem to be a factor in the decrease of water rats. The dry seasons which south-eastern Australia has experienced recently also tend to make many of their usual haunts unsuitable, resulting in their migration to better-watered areas, thus congesting these and making trapping more easy. The introduction of the English perch and the carp to northern lakes and rivers seems to have provided water rats with an abundant supply of natural food.

Fur farming has not yet been established in Australia, but in America many animals are bred artificially for the sake of their furs, the most common of course being the silver fox. It does not appear that any insuperable difficulties oppose the farming of the water rat. There must be many large areas of poor, swampy country in this State which could be utilized for the purpose. Already one group of Melbourne business men has made tentative inquiries and investigations on this point, and if the present import prohibition remains in force for any length of time, which will no doubt result in high prices for skins, the farming of water rats will probably be attempted.

TWO NEW SPECIES OF *PRASOPHYLLUM*

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

I. *Prasophyllum trifidum*, sp. nov.

Planta gracillima, 10-15 cm. alta. Folii lamina proxime ad flores, brevis aut spicam excedens. Flores pauci aut multi confertique immaturi virides, maturi ex rubro subnigri. Sepalum dorsale acuminatum, 1½ mm. longum; sepala lateralibus oblonga, patentia, acuta. Labellum ovatum, acutum, marginibus anterioribus serrulatis et lamina crassa longitudinale. Columna alis latis, alte trifidis.

A very slender plant, 10-15 cm. high. Leaf-lamina close under the flowers, short, or in small few-flowered specimens exceeding the spike. Flowers either few, or numerous in a crowded spicate raceme; the buds green, the mature flowers deep purplish-red. Dorsal sepal rather broad but acuminate, 1½ mm. long; lateral sepals rather longer, oblong, widely divergent, acute. No segments gland-tipped. Labellum ovate, acute, with minutely-serrulate anterior margins, and a thick channelled raised plate along its whole length. Column pale, with broad, *prominently trifid* wings, the "teeth" very dark at the tips.

Castlecrag, Middle Harbour, Port Jackson; May 1940. (H.M.R.R.).

The discovery of this little orchid in a Sydney suburban area

is suggestive of the number and variety of forms yet to be found belonging to the section *Genoplesium* of the genus *Prasophyllum*. So far as I can judge, *P. trifidum* is quite distinct from any species hitherto described. It comes perhaps nearer to *P. nigricans* R.Br. than to any other, but it could not be included in that species.

II. *Prasophyllum aureoviride*, sp. nov.

Planta gracillima, 8-15 cm. alta. Folii lamina proxime ad flores, comparate longa. Flores pauci aut multi, late patentes, aureovirides. Sepala petalaeque saepe ad apices glandulosa. Sepalum dorsale latum, acutum, circiter 1 mm. longum; sepala lateralia late patentia; petala lanceolata. Labellum acutum, ovatum, lamina longitudinale canaliculata. Columnae alae impariter bifidae.

A diminutive plant, yet not inconspicuous owing to the very bright golden-green of the inflorescence. Height 8-15 cm. Leaf-lamina close under the flowers and not infrequently exceeding them. Flowers few or many, wholly golden-green, not very densely set, *opening widely*. Sepals and petals usually minutely gland-tipped. Sepals broad but acute, the laterals widely diverging; petals lanceolate. Labellum very similar in form to that of *P. trifidum*, but the margins quite entire. Column-wings unequally bifid.

Oxford Falls (between French's Forest and Narrabeen), March 1938 (M. Moodie); same loc. May 1940, also French's Forest (Mrs. C. A. Messmer and H.M.R.R.); Castlecrag, Middle Harbour, May 1940 (H.M.R.R.).

These two new species bring the number of published species of the section *Genoplesium* in New South Wales to at least 23; and it is known that there are others which do not agree with any accepted species. Mr. E. Nubling, of Normanhurst, sent quite a number of these to Dr. R. S. Rogers some years ago, but though Dr. Rogers expressed the opinion that at least some were undescribed species, he has not yet been able to deal with them.

The development of these "pygmy" *Prasophylls* in this State, therefore, is most remarkable. Some of Fitzgerald's species, described and figured many years ago, have never been identified in the field since, and must be very rare.

Mr. W. H. Nicholls, in his recent article in this journal dealing with *P. densum* Fitzg., raises the question whether too much importance may not be attached to the precise form of the column-appendages. To the non-botanist indeed, the distinctions between many of these diminutive flowers appear to savour of those between Tweedledum and Tweedledee. But it must be remembered that this view arises simply because the flowers are too small to allow of their detailed structure to be seen with the naked eye. It does not follow that they are identical. Size is no criterion of character.

If we must be on our guard against unnecessary "splitting," we must be equally alert to recognize that real and permanent distinctions are just as important to science in diminutive flowers as they are in large ones.

AN AUSTRALIAN CANNIBAL PYTHON

By DAVID FLEAY, B.SC., Director, Badger Creek
Sanctuary, Healesville

Two years ago, in its home country outside Townsville (Q.), I first made contact with the handsome Black-headed Rock-Python (*Aspidites melanocephalus*).

That was during a visit to the Sanctuary owned by Mr. St. John Robinson, who, like many people in North Queensland, quite excusably regarded this unpython-like brown-barred reptile as a venomous tiger snake. On the rocky knolls near Townsville these sleek, thick-bodied but harmless snakes make their homes, and from Townsville en route to New Guinea by boat I carried two large specimens each nearly eight feet in length. They were left at Cairns, for it was my intention to take them south on the return journey. Unfortunately, when the *Macdhui* again berthed in the North Queensland port, the much-prized snakes had vanished!

However, twelve months ago Mr. St. John Robinson managed to secure another healthy specimen about five feet long. It arrived by boat, and from this prettily marked and very amiable creature we were to learn a good deal about the extraordinary feeding habits of its kind.

In more ways than one, particularly regarding its attitude towards other snakes, the Black-headed python is deserving of the alias of "Tiger Python."

Restricted to far northern Australia, this snake grows to about 8 feet in length. Its body colour is olive-brown to dark-brown, crossed with darker bands. Its belly is vividly yellow, while in striking contrast to the rest of the body, the head and neck are glossy black.

The Woma (*A. ramsayi*) of inland Central Australia is a cousin to the Black-headed Python, and these two snakes are the only members of the genus in Australia.

In a year's habitation of the Tropical House at Healesville Sanctuary, the Black-headed Python from Townsville, which is the subject of the illustrations, has grown at least 15 inches in length and two inches in girth. It has more than borne out the remarks of Mr. Heber Longman (Director of the Queensland Museum) regarding the voracious appetites of members of its species. He once found a specimen only an inch in diameter which had the head of a bustard (plain turkey) stuck in its mouth. The snake was found dead at the spot where the plain turkey had been shot and its severed head left lying on the ground.

Digressing for a moment, it is worth while, in view of the following unrecorded feeding habits of the Black-headed Python, to remember one or two things about other snakes.

It is not uncommon for members of venomous species, particularly those that happen to seize the same victim simultaneously, to

become unintentional cannibals—the larger one swallowing not only the prey, but the smaller snake as well. In rarer instances there are those venomous snakes, uncommon in Australia, which occasionally hunt and devour smaller snakes. I once watched a large black snake deliberately attack and devour a small member of the copperhead species.

Ample proof has been supplied by the Black-headed Python now at Healesville that associated with its proportionately small and unpython-like head, with the upper jaws forming a projecting “shovel snout,” it is a cool and deliberate hunter of other snakes. In fact, it constricts and swallows venomous snakes and also lizards in preference to the usual furred and feathered game sought by the typical pythons!

In the course of the past twelve months this specimen has devoured nearly thirty snakes, and would have disposed of more had they been available. These included copperheads, blacks and tigers. As with many another curious discovery, we “dropped” to this habit when one of our “best” black snakes placed in the tropical house for winter warmth turned up “missing” as a corrugated bulge in the Tiger Python’s stomach!

After that only “second-rate” venomous specimens were permitted as periodical repasts for the amiable but very business-like python. Bites from these poisonous fellows worried the hunter not at all, for he seemed to possess a definite immunity.

Once the Black-headed fellow scented the presence of a venomous snake its fate was only a matter of minutes, and in such a case the cannibal ignored rats and mice entirely. I do not mean to infer that mammals and birds were unacceptable, but rather that they were very secondary food items. Curiously enough, in spite of careful observation, it was not until February this year (1941) that the cannibal’s actual method of tackling its reptilian victims was successfully watched and photographed. Having sloughed its skin for the third time in six months, the hungry python encountered a lively black snake on a heap of grass. It seized the startled reptile near the head and twisted coils about its sinuous body, gradually taking advantage of the writhing of the other to grip it more securely. Then, without bothering to throttle its impotent captive, or even to await its eventual death, the marauder worked its glistening-black shovel-nosed head to the nose of the other snake and proceeded to swallow it—alive and wriggling!

Working the slack of the black snake’s body by degrees through its own coils, the voracious python crammed it down inch after inch and foot after foot. In less than half an hour from the moment of attack the last protesting fraction of the poor black snake’s tail had disappeared, leaving a comfortable expression on the ebony visage of its “murderer.”

PLATE II



General view of Black-headed Python commencing to devour a black snake.
(The Python's gaping jaws may be seen on one side.)



So engrossed is the Python in the early stages of grappling with the black snake that it ignores being lifted from the ground.

Photos. : David Fleay.

THE FLORA OF SUGGAN BUGGAN

By W. HUNTER, Bairnsdale, Victoria.

Recently I have had good opportunities for observing the flora of the Suggan Buggan district, in East Gippsland. This appears to have been virgin country for botanical observation, and the results have been more than usually interesting.

Suggan Buggan (the "u" is pronounced as in "sugar") is the more open portion of the valley of the Suggan Buggan or Toonginibooka River, of which the two main tributaries, the Berrima and the Ingeegoodbee Rivers, rise in the Australian Alps of New South Wales, flowing southwards to join in Victoria and form the Suggan Buggan River. It is hilly, even mountainous, country, though some parts are less steep and more undulating. The elevation ranges from about 1,000 feet at the river to over 3,000 feet on the spurs and on the ranges which almost completely surround it.

The climate is probably the driest and warmest of any part of East Gippsland. There are no statistics on the matter, but the annual rainfall is about 16 to 18 inches.

The geological formation is almost entirely granitic, and the soil is generally a dry, rather coarse friable reddish or yellowish sand, much of it stony, with many rocky outcrops. Gully erosion is prevalent, particularly on the easier and less rocky lower slopes of the valley, which are comparatively sparsely timbered. Here the effect of the occasional denser patches of Murray pine in checking the extension of the scour gullies is well exemplified.

Conditions are very similar in the Deddick country, which lies a few miles to the south-east of Suggan Buggan and on the other side of the Snowy River; and generally the floras of these two districts agree, being largely divergent from that of any other part of East Gippsland. There are very few species which I have recorded for Deddick but not for Suggan Buggan, these including the uncommon flax acacia (*A. linearis*), the large-flower goodenia (*G. grandiflora*, var. *McMillanii*), and the very rare *Myoporum floribundum*. On the other hand, several species have been found in Suggan Buggan which are not known to occur elsewhere in East Gippsland. An interesting point is that some of these have been previously recorded in Victoria only in the N.W. District.

Suggan Buggan is, by Gippsland standards, comparatively lightly timbered; but over considerable areas of the hillsides Murray pine (*Callitris glauca*) grows in profusion, sometimes to the almost complete exclusion of other vegetation. However, the most common tree is the white box (*Eucalyptus albens*), and the best grass-land is the open forest of this timber. On the hillsides, red stringybark (*Eucalyptus macrorrhyncha*) grows

more thickly, usually intermixed with the white box. Other common trees are manna gum (*Eucalyptus viminalis*), drooping she-oak (*Casuarina stricta*), lightwood (*Acacia implexa*), curra-jong (*Sterculia diversifolia*), cherry ballart (*Exocarpus cupressiformis*), sickle wattle or hickory tanning wattle (*Acacia falciformis*), and long-leaf box (*Eucalyptus elaeophora*). Contrary to the usual occurrence in Gippsland, the lightwood, which is scattered over the hills, is much more common and abundant in Suggan Buggan than the blackwood (*Acacia melanoxylon*), which is confined to the river banks and the deeper, more shaded gullies.

An interesting "find" was *Acacia doratoxylon*, the currawang or spearwood, which resembles the closely-related "jam" of Western Australia (*A. acuminata*) in the freshly-cut timber having a strong smell of raspberry jam. However, unlike the "jam," which is said to indicate good agricultural land, the currawang grows on the poorest and driest hillsides.

The golden wattle (*Acacia pycnantha*), a tall, slender shrub, forms considerable patches of scrub on some of the poorer hillsides. The silver wattle (*A. dealbata*) is apparently confined to the river banks. The black wattle (*A. mollissima*) occurs in a shrubby form which I have not seen elsewhere except in the similar Deddick country: the fewer pairs of pinnae and of leaflets to each leaf, and the leaflets longer and less closely disposed, seem to show an approach towards *A. decurrens*, a species which to the best of my knowledge has not been found in Victoria.

Some common species exist here only in an unusual form, more or less unlike the typical form in general appearance. For example:—*Bursaria spinosa*, var. *incana*, the adult leaves of which are sub-coriaceous and closely beset beneath with short dense greyish hairs: the elderberry panax (*Polyscias sambucifolia*), here rarely more than a low bushy shrub, with comparatively thin leaves much dissected into linear segments: and the kangaroo apple (*Solanum aviculare*), with the leaves generally smaller and usually all entire, the flowers rather larger with somewhat crisped petals, and the berries globular.

The two common species of Clematis of the East Gippsland forests, *C. glycinoides* and *C. aristata*, are here restricted to the more shaded gullies and river banks, and the latter species is locally rare. But the genus is well represented by *C. microphylla*, var. *leptophylla*, which grows in profusion. The luxuriant masses of cream-coloured flowers of this climber are probably the most conspicuous floral feature of the district, including Deddick, where it is almost equally abundant.

Attractive flowering shrubs include the following:—

Eriostemon trachyphyllus, the blunt-leaf wax-flower, a stiff

woody shrub attaining a height of 8 to 10 feet, and bearing whitish flowers in great profusion from early spring until well into the summer. This shrub is not uncommon in rocky country in East Gippsland.

Phebalium lamprophyllum, the shining phebalium. This is one of the species that I have seen only in Suggan Buggan, but this locality, where it grows luxuriantly, shows that it is not exclusively alpine. (Ballantyne's Hills, about 2,500 feet.)

All six local species of the Rutaceae have attractive flowers. The rarest of them in Suggan Buggan is the red correa (*C. rubra*), which is generally so widely spread and abundant.

Olearia iodochroa, the violet daisy-bush, is fairly abundant; it occurs in other parts of Gippsland also. Concerning this species, Ewart says (*Fl. Vict.*, 1114): "Confined to alpine regions . . . and rare." This statement was apparently based on herbarium records; field observations do not confirm it. The plant seems to grow best at elevations between 2,000 and 3,000 feet, in stony soils (apparently the more stony the soil, the better it thrives), but it descends to about 1,000 feet, not only at Suggan Buggan, but in other localities also. It flowers rather early (July-August), the rays, in different plants, showing a range through all shades from violet to white.

Oxylobium ellipticum, var. *angustifolia*, the golden shaggy-pea, is comparatively scarce in Suggan Buggan, and does not flower as profusely as it does in the moister forests of East Gippsland, where it is fairly common.

Mirbelia oxyloboides, the mountain mirbelia, is really a sub-alpine species, abundant on the highlands of Ingeegoodbee to the north, but plants occur here down to about the 2,000-foot level.

Prostanthera rotundifolia, the round-leaf mint-bush, generally common in Gippsland, is comparatively rare in Suggan Buggan, only a few plants having been seen along the course of the river.

Shrubby species with less showy flowers, which I have yet recorded only in Suggan Buggan, are *Haloragis racemosa*, var. *Baeuerlenii* (shrubby raspwort), and *Anthocercis albicans* (grey ray-flower), the massed plants of the latter being very conspicuous because of their silvery-grey colour. Another is *Plagianthus pulchellus*, the common hemp-bush, but here uncommon and very sparsely scattered along the banks of the river.

Two species of mistletoe are abundant, the more common probably being the stalked mistletoe (*Loranthus Miquelii*), which grows usually on white box. The other is the very similar drooping mistletoe (*L. pendulus*), mostly on red stringybark. Both attack other eucalypts, the manna gum being a frequent host of either species. A third species (*Phrygilanthus eucalyptifolius*) is comparatively rare in Suggan Buggan, and has been seen only on red stringybark.

A single plant of *Glossogyne tenuifolia* was found, thus restoring the species to the Victorian list. Mueller included it in his "Key," p. 293. It is described also in Bentham's "Flora Australiensis," vol. iii, p. 544.

Blennodia alpestris (or *Drabastrum alpestre*, mountain cress) was found not on the higher lands but on sandy slopes close to the river—elevation about 1,200 feet, and conditions not even sub-alpine. Many plants were seen, scattered over a small area, mostly in the shade of Murray pine, but some in fully exposed positions. All were thriving, and it was obviously a natural occurrence.

The grasses of Suggan Buggan are particularly interesting. Three common species of East Gippsland—kangaroo grass (*Themeda triandra*), tussock grass (*Poa caespitosa*), and wallaby grass (*Danthonia semi-annularis*)—are the most common here, and constitute probably the greater part of the pasture. Common wheat-grass (*Agropyron scabrum*), another grass abundant here, also occurs frequently in other parts of Gippsland. But the most abundant grass of the moister forest country—weeping grass (*Microlaena stipoides*)—is here quite rare; and another very common grass of the moister parts—hedgehog grass (*Echinopogon ovatus*)—is comparatively scarce. On the other hand, several local grasses are unknown or uncommon elsewhere in East Gippsland.

Two closely-related species of beard-grass, *Dichanthium sericeum* and *D. affine*—until recently known respectively as *Andropogon sericeus* and *A. affinis*—grow together in fair abundance. Both are believed to be uncommon in Victoria, and until recently the former was recorded only for the N.W. District, and the latter only for the N.E. Neither is confined in Gippsland to the Suggan Buggan district. Both occur at Deddick, and *D. affine* occurs at Buchan and Bairnsdale also.

Paspalidium gracile, graceful panic grass, is another "N.W. District" grass which grows freely about the lower parts of Suggan Buggan. It is found at Deddick also.

Agropyron pectinatum, comb wheat-grass, is abundant in places on the Rocky Ranges, under the heavier forest cover, where it grows to a height of six feet. *Festuca duriuscula*, hard fescue, is sparsely scattered over the grass-lands of Suggan Buggan, but never grows thickly.

Of the 43 species of grass listed, 10 species are introduced aliens; and of these, two are very abundant on the lower grass-lands—*Festuca bromoides* (brome fescue) and *Aira caryophyllea* (silvery hair-grass); a third, *Koeleria phleoides* (annual cat's-tail) is little less abundant.

A result of the dry conditions is the comparative paucity of ferns. Even the ubiquitous bracken is much less in evidence than usual. The most common ferns are the rock fern (*Cheilanthes*

tenuifolia), the necklace fern (*Asplenium flabellifolium*), the bristly cloak fern (*Notholaena distans*), and the blanket fern (*Pleurosorus rutifolius*).

The local occurrence of the lithophytic orchid *Dendrobium striolatum* and of the fern *Cyclophorus serpens* seems to be remarkable. Plants of both were found (N. A. Wakefield) in a deep cleft in the Rocky Ranges, where the conditions approach more nearly those of East Gippsland generally. Some other species of ferns and orchids which are generally associated with heavier forest cover and moister conditions—e.g., tender bracken (*Pteris tremula*) and the purple helmet-orchid (*Corysanthes diemenica*)—are found in Suggan Buggan in shaded gullies, though they are of course uncommon.

Of the 365 species recorded, 57 are naturalized aliens. (Suggan Buggan was occupied in the early days of the settlement of Gippsland, but there has been no permanent residence there within the last forty years). Most of these alien species are now common in the district. Other than the grasses, which have already been mentioned, the most abundant are the shore thistle (*Carduus pycnocephalus*), the spear thistle (*Cirsium lanceolatum*), flatweed or cat's-ear (*Hypochaeris radicata*), hare's-foot clover (*Trifolium arvense*), and (moth) mullein (*Verbascum Blattaria*), this last very conspicuous in summer with its long racemes of showy yellow flowers: some others are almost equally abundant.

Two alien species, both proclaimed noxious weeds—thorn-apple (*Datura Stramonium*) and hemlock (*Conium maculatum*)—show remarkable adaptability to the prevailing conditions. They usually grow on good moist cultivable soils, as at Bairnsdale, Orbost, and Cann River. In Suggan Buggan, both are most commonly seen on the flatter parts along the river; but both grow also on the hill-sides, and occasionally even on the exposed tops of dry sandy ridges. It is unfortunate that the thorn-apple has been erroneously called "castor-oil plant"; most Gippslanders probably know it only by this incorrect name.

In compiling this list, it has been difficult to decide on the boundary between Suggan Buggan and the adjacent highlands. Some high spurs, such as Buchan Ridge, Ballantyne's Hills, and the western end of the Suggan Buggan Range, are actually within the valley, and all species found thereon are included. Species which I have found only on the surrounding highlands above the 2,500-foot level are omitted. Within these limits, the list includes all the local species of which I have knowledge, but I am sure that many more have yet to be recorded, particularly in the monocotyledonous families.

For the naming of many specimens I thank the staff of the National Herbarium; Mr. W. H. Nicholls; and Mr. T. S. Hart.

[Mr. Hunter's list is available for members' study in the Club library.—Editor.]

AN EARLY VICTORIAN BOTANIST

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

In the National Herbarium of New South Wales are a number of orchid specimens (and I believe other families also are represented) bearing the labels "Herbarium of J. G. Robertson." The localities given are either Wando Vale, Glenelg River, or Portland, all in the Western District of Victoria.

These specimens brought back to me vivid memories of my boyhood fifty years ago, when my parents lived at Coleraine, and many weeks of my holidays were spent in the Wando Valley, some 16 miles north of that township. Just where the road crossed the little Wando River (an affluent of the Glenelg), was the homestead of Wando Vale, then owned by the late William Moodie, who was a nephew of J. G. Robertson, of Wando Vale, an estate some miles downstream towards Casterton.

The Moody family, with whom I spent so many happy days, was a large one, and all were lovers of the bush and its treasures, so my cup of joy was always full when a visit to Wando Vale was on the holiday menu. Being even then an incipient botanist, I often heard of the botanical collecting done by the great-uncle of Wando Vale. Incidentally, I may remark that in recent years it has been a great pleasure to renew acquaintance, in Sydney, with two members of the old Wando Vale circle, Mr. Murray Moodie and Miss Grace Moodie, of Mosman, the former being a well-known orchid-grower.

John George Robertson was born at Glasgow in 1803. Not very long after he came of age, he accompanied an expedition to India in the capacity of "botanist and naturalist." In 1831 he emigrated to Tasmania, where for some years he managed the Formosa estate, near the present Cressy. He was well acquainted with R. C. Gunn, who collected for the younger Hooker in Tasmania, and whose own admirable herbarium (1836-1844) is incorporated in the Sydney collection.

In 1840 Robertson left Tasmania, and landed at Portland, Victoria, where the Hentys had recently established themselves as pioneer settlers. He brought with him a valuable consignment of stock, and ultimately settled at Wando Vale. Here on several occasions he entertained Governor Latrobe, who was himself something of a botanist. It seems probable that Gunn also visited Wando Vale; for all the labels on Robertson's specimens at Sydney are in the same handwriting as those of Gunn's herbarium.

Robertson collected extensively along the Glenelg and Wando Rivers, and about Portland. When he returned to the old country he gave his collection to Sir William Hooker, at Kew.

Bentham had access to it while preparing his "*Flora Australiensis*," and he mentions Robertson frequently; curiously mis-

spelling Wando "Wendu." Bentham commemorated Robertson's botanical work in the names *Calochilus Robertsonii* and *Ranunculus Robertsonii*.

Robertson sold Wando Vale after some years and returned to Scotland, where he purchased "Baronald," near Lanark, and died there at a comparatively early age in 1862.

For most of the above particulars I am indebted to the late J. H. Maiden's "Records of Victorian Botanists," reprinted from this journal for November, 1908.

FLORA OF THE CARNARVON RANGES

By R. H. GODDARD, Sydney.

In September last Mr. S. R. Mitchell and the writer had the opportunity of visiting the Mt. Ackland National Reserve, in the Carnarvon Ranges, in Central Queensland, as described in the March issue of the *Victorian Naturalist*.

The area is full of interest to the Field Naturalist.

Approaching from Roma, the country gradually rises off the blacksoil plains into clayey soils timbered with Brigalow (*Acacia harpophylla*), Wilga (*Geijera parviflora*), Belar (*Casuarina lepidophloia*) Emu Bush (*Owenia acidula*), Myall (*A. pendula*), and here and there Sandalwood (*Eremophila Mitchellii*). Passing on to Injune and Hutton's Creek, the country changes to Box (*Eucalyptus populifolia*) and Ironbark (*E. melanophloia*) with an occasional Sandalwood.

From Hutton's Creek to the top of the divide the country is poor sandy shallow soil, chiefly covered with Pine (*Callitris glauca*), and some Ironbark, passing through large sandy areas and open forest consisting of Moreton Bay Ash (*E. tessellaris*), Apple Gum (*Angophora lanceolata*) and other timbers. The road leading to Springsure continues to rise until the top of the divide is reached at 1,600 feet, over poor spinifex country.

The descent is made into the north and eastern fall where the country changes and the hillsides are adorned with Spotted Gum (*E. maculata*), Tumbledown Gum (*E. dealbata*), Moreton Bay Ash, and "Yellow-belly" (*E. terminalis*), a large range of Wattles such as *Acacia Cunninghamii*, *A. macradenia*, *A. neriifolia*, *A. polybotrya*, together with *Casuarina inaphloia*, *Angophora intermedia* and *A. lanceolata*, also *Leptospermums*, *Hoveas*, *Dillwynnias*, *Bauhinias*, *Hakeas* and *Grevilleas*.

The country changes again to open forest country covered with Ironbark, Box, and here and there belts of Coolibah, Mulga, Belar, and Brigalow scrubs. Giant Prickly Pear (*Opuntia tomentosa*) is very thick in some parts of the scrub, but it is being effectively destroyed by the cochineal insect.

Many nest mounds of Scrub-Turkeys (*Alectura lathamii*) were seen in the pear country; several of them were made almost entirely of dead pear leaves.

Observations were made by Mr. Edgar Young, of Brisbane, of the ravages of the saw-fly over many thousand acres where practically every ironbark had been stripped of its leaves and the dead carcasses of cattle everywhere was mute evidence of this plague.

Here and there giant Bottle-trees (*Sterculia rupestris*) and Currajong (*S. diversifolia*) were met with.

Our route into the Mt. Ackland Reserve lay through Early Storms Station, and following up Carnarvon Creek we entered one of the many

mighty gorges carved between the high sandstone cliffs, the geological features of which have been described by Mr. Mitchell.

The vegetation growing in the basalt alluvial in these canyons is magnificent. Red and Yellow Hibiscus, Cabbage Tree (*Livistona*), Grass Tree and Zamias, Fern Trees, Orchids, Clematis, Lupins, Giant Ferns (*Angiopteris*) are all in great profusion, whilst Spotted Gums grow to a great height. On many of the sandstone cliffs masses of Flannel flowers (*Actinotus helianthi*) were found wherever soil had collected in the ledges.

Plants observed in the Carnarvon area include:—*Dillwynia floribunda*, *Bredemeyera ericina*, *Hardenbergia monophylla*, *Clematis aristata*, *Actinotus helianthi*, *Grevillea sericea*, *Stypantra glauca*, *Hakea pluri-nervia*, *Hibbertia stricta*, *Phebalium squamulosum*, *Helichrysum diosmifolium*, *Gompholobium latifolium*, *Pomaderris elliptica*, *Conospermum taxifolium*, *Pimelia linifolia*, *Styphelia*, *Dampiera Linschotenii*, *Backea densifolia*, *Exocarpus cupressiformis*, *Petalostigma quadriloculare*, *Callistemon viminalis*, *Leptospermum attenuatum*, *Acacia juniperina*, *A. myrtifolia*, *A. nerifolia*, *A. conferta*, *A. excelsa*, *A. decora*, *A. Cunninghamii*, *A. macrodenia*, *A. decurrens*, *A. polybotrya*, *A. Bancrofti*, *Calythrix*, *Casuarina inophloia*, *C. torulosa*, *Alstonia constricta*, *Angophora lanceolata*, *A. intermedia*, *Dodonaea viscosa*, *Capparis Mitchellii*, *Atalaya hemiglauca*, *Callitris glauca*, *C. calcarata*, *Jacksonia scoparia*, *Lysicarpus ternifolius*, *Leucopogon biflorus*, *Bossiaea rhombifolia*, *Sterculia rupestris*, *S. diversifolia*, *Macrozamia Moorei*, *Xanthorrhoea*, *Tristania suaveolens*, *Eucalyptus microtheca*, *E. melanophloia*, *E. dealbata*, *E. crebra*, *E. terminalis*, *E. rariflora*, *E. trachyphloia*, *E. tereticornis*, *E. tessellaris*, *E. populifolia*, *E. corymbosa*, *E. decorticans*, *E. acmenioides*, *E. hemiphloia*, *E. maculata*.

A FASCINATING WHISTLER

The Olive Whistler (*Pachycephala olivacea*) is still fairly plentiful in the dense scrub of the moist gullies in the Dandenong Ranges, where conditions make it extremely difficult to observe the bird. In size it is larger than either the Golden or Rufous-breasted Whistlers and it is usually slower in its movements than either of these birds.

Although practically confined to humid forests throughout the year, the Olive Whistler will sometimes leave its usual haunts and venture into more open forest country. In the autumn of 1937 a bird was seen near the Syndal railway station, just beyond Mount Waverley, where the country was dry and the timber very open. While living at Tecoma a few years ago I frequently noticed one or two birds in our garden during the summer months, and in all probability they nested in one of the gullies not far away.

Owing to the denseness of the scrub inhabited by this bird, its nest is rarely found. My only experience with a pair during breeding-time was at Noojee in October, 1923; a pair was watched for some days building a nest, in an exposed position, on dead fronds hanging from a tree-fern about 15 ft. high. I was not able to stay until the eggs were laid. The nest was not built, as would be expected, in dense scrub, but in an open space close to the Loch River. It is possible that these birds avoid building their nests in very dense scrub, but may prefer to select a tree which is exposed to the sunlight. Further observations on this point would be interesting.

D. DICKISON.

Will readers please note that the Volume number in the Index published with last issue should be LVII.

Field Naturalists' Club of Victoria

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H. C. E. Stewart, J. H. Willis.

EXCURSION

MONDAY, JUNE 16 (King's Birthday Holiday).—Sherbrooke Forest.
Subjects: Fungi and Lyre-birds. Leaders: Messrs. H. C. E. Stewart
and A. G. Hooke. Travel by train to Upper Fern Tree Gully
leaving Flinders Street Station at 9.18 a.m., thence by Railways
Bus to Kallista. Fares, train, second-class return, 2/5; bus, 1/-
each way.

Note.—The departure time of the train may be altered, being a
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THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

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BECCARI: *Wanderings in the Great Forests of Borneo* (Travels and Researches of a Naturalist in Sarawak), 1904, 25/-.

PYCRAFT: *A History of Birds*, 1910, 30/-.

SHORTIDGE: *The Mammals of South-West Africa*, 1934, 2 vols (Autographed), £2/10/-.

HENDERSON and CRAIG: *Economic Mammalogy*, 1932, 10/-.

BROOKS: *Handbook of Invertebrate Zoology*, 1882, £1.

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THE

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Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, JULY 14, 1941

1. Minutes.

2. Apologies.

3. Subject for the Evening:

“Victorian Fungi,” by Mr. J. H. Willis.

(Mr. Willis will deal with the new book just published by the Club, “Victorian Fungi.” Copies of this book will be available to members at the meeting.)

4. Correspondence and Reports of Excursions.

5. Election of Members.

AS ORDINARY MEMBER

Miss V. G. Mollison,
119 Leopold Street,
South Yarra, S.E.1.

PROPOSER.

Mr. J. H. Willis.

SECONDER.

Mrs. J. L. F. Woodburn.

AS COUNTRY MEMBER:

Mr. J. D. Waterhouse,
42 Archer Street,
Chatswood,
Sydney, N.S.W.

Mr. S. R. Mitchell.

Mr. L. W. Cooper.

6. Nomination of Members.

7. General Business:

(a) Forthcoming Excursion.

(b) Questions by Members.

8. Nature Notes and Remarks by Exhibitors.

9. Conversazione.

The Victorian Naturalist

Vol. LVIII.—No. 3

July 9, 1941

No. 691

PROCEEDINGS

The Annual Meeting of the Club was held on Monday, June 9, 1941. The President, Mr. L. W. Cooper, presided, and about fifty members and friends attended. The smallness of the attendance was due to inclement weather.

REPORTS OF EXCURSIONS

The recent excursion held at Burnley Horticultural Gardens was reported on by Mr. G. N. Hyam.

ELECTION OF MEMBERS

The following were duly elected:—As an Ordinary Member, Mr. Ros. Garnet; as Associate Members, Misses Molly and Judy Herring.

ANNUAL REPORT AND BALANCE SHEET

The Annual Report was presented by the Hon. Secretary, and was adopted on the motion of Messrs. A. S. Chalk and N. Lothian.

The Balance Sheet was read by Mr. A. S. Chalk, and was duly adopted.

ELECTION OF OFFICE-BEARERS

There being only one nomination for President, Mr. Cooper declared Mr. P. Crosbie Morrison elected, and extended him congratulations. Mr. Cooper thanked all officers and members for their co-operation, and asked that the same support be given the new President. Mr. Morrison, in his reply, referred to the competent work of Mr. Cooper as President.

In a ballot, Messrs. G. Coghill and H. P. Dickins were elected Vice-Presidents.

The following were elected without opposition: Hon. Editor, Mr. A. H. Chisholm; Hon. Secretary, Mr. F. S. Colliver; Hon. Assist. Secretary, Mr. G. N. Hyam; Hon. Treasurer, Mr. J. Ingram; Hon. Librarian, Dr. C. S. Sutton; Hon. Assist. Librarian, Mr. W. H. Ingram.

An election for the Committee was necessary and the ballot returned Messrs. A. S. Chalk, J. H. Willis, H. C. E. Stewart, Ivo Hammett, and S. R. Mitchell.

AUG 18 1941

GENERAL BUSINESS

(a) Forthcoming Excursions:—These were spoken to by their respective leaders.

(b) New Excursion List:—The President asked that members submit localities and leaders' names for consideration in drawing up the new list.

(c) Honor to Member:—The President announced that our Editor, Mr. A. H. Chisholm, had been elected C.M.Z.S. (London), and on members' behalf congratulated him on this honor. Mr. Chisholm, in reply, said the interesting point was that the election had taken place last December—a bad period for air-raids.

PRESIDENTIAL ADDRESS

Mr. Cooper spoke on "The Value of Plants to Man." His remarks held members closely interested, and he was cordially thanked.

THANKS TO RETIRING OFFICERS

Mr. A. D. Hardy moved a vote of thanks to the retiring officers. This was seconded by Mr. H. Jenkins, and carried with applause.

EXHIBITS

Mrs. M. E. Freame:—Pipe-fish and baby Squid.

Miss J. W. Raff:—Mushroom growing on the sea shore in very heavy sand at Mornington.

Mr. A. D. Hardy:—Microscopic slide showing sections of Echinoid spines, also the shells complete with spines.

THE F.N.C. FUNGI BOOK

By arrangement with the Committee of the Club, Mr. J. H. Willis, B.Sc., has written a treatise on Victorian Fungi, and this has now appeared as the third of the Field Naturalists' Club Handbooks. Its price is 2/6 a copy, and it is hoped that all members will avail themselves of this opportunity to obtain an attractive and informative booklet.

Dr. Ethel McLennan (Associate Professor of Botany, University of Melbourne) points out in a Foreword that Mr. Willis has dealt with 120 forms, most of them frequent and widespread, and therefore has provided a valuable Key for beginners and a good nucleus to build upon. The difficulties surrounding the study of our toadstools, it is suggested, will be greatly lessened by this booklet, especially as it carries many excellent illustrations, including three colour-plates.

No lengthy review of *Victorian Fungi* is given here because it is anticipated that all readers of the *Naturalist* will obtain the booklet for themselves. Copies can be supplied by the secretary, assistant secretary, or librarian.

FIELD NATURALISTS' CLUB OF VICTORIA

61st ANNUAL REPORT

Ladies and Gentlemen:—

Your Committee has pleasure in submitting the 61st Annual Report.

The membership is as follows:—Life Members, 1; Honorary Members, 15; Ordinary Members, 222; Country Members, 68; Associate Members, 25. The total is a decrease of 15 on the figures of the last report.

We record with sorrow the death of the following members of the Club:—Mr. W. M. Bale, a foundation member (1880-1940), Mr. D. J. Paton (1914-1941), Mrs. A. A. Brunton (1919-1940), and Mr. A. E. Keep (1919-1940). Mrs. A. S. Kenyon, a former member, also passed away during 1940.

With one exception, all of our meetings have been held at the Club Rooms this year. The following was the programme of lectures for the year:—Presidential Address, "Adventures among Birds," by Mr. A. S. Chalk; "The Grandeur of the Grampians," by Mr. Gilbert Rogers; "A Bird Evening," with motion pictures and several speakers (Mr. Gregory Mathews attended this meeting); "Wild Flowers of the European Alps," by Mr. E. E. Pescott; A Display of Cultivated Wild Flowers (held at the Horticultural Society's Hall); "Locomotion in Mammals," by Mr. C. W. Brazenor; "Some Entomological Experiences," by Mr. F. E. Wilson; "Bats," by Messrs. C. L. Barrett and P. Crosbie Morrison; "A Naturalist in the Carnarvon Ranges," by Mr. S. R. Mitchell; "Isles of the Arafura Sea," by Mr. C. L. Barrett; "A Zoological Expedition to South America," by Prof. W. E. Agar; "The Land of Wait Awhile," by Dr. F. Tate and Dr. R. F. O'Sullivan (with motion pictures in natural colours).

The Excursion List had to be rather drastically cut down this year owing to wartime petrol restrictions, but some interesting and well attended excursions have been held.

Volume 57 of the *Victorian Naturalist* has been completed, and here again wartime restrictions have been felt. By Government order we are reduced to 16 pages per issue and this has limited our scope, but some interesting papers of both popular and scientific value have been published. That the journal continues to hold its place in scientific literature is proved by the additional requests for exchange.

Owing to war conditions we have not been able to proceed as we would have liked with matters pertaining to the better protection and preservation of wild life, but the following matters have been enquired into and information passed on to the authorities concerned:—Export of geological material from Australia; intro-

duction of the Game Amendment Bill, and the proposed listing as a National Monument of unusual outcrop of quartz at St. Arnaud.

The enjoyable outing held at Ararat last year brought about the formation of a Sub-Committee to enquire into the possibility of holding similar meetings in other country towns. At present enquiries are being made in Bendigo and it seems likely that in spring a week-end excursion will be held there.

As usual individual members have given lectures to various bodies, including Boy Scouts' Associations, young people's gatherings, etc., and our Hon. Editor officially opened the additions to the Maranoa Gardens. We were represented at a gathering arranged to meet Mr. Gregory Mathews and at the annual meeting of the Town Planning Association.

The position of members on active service was discussed early in the year, and it was decided that such members be kept financial on the books for the duration; the members concerned have been advised of this, and letters conveying best wishes have been sent them.

This year no official Wild Nature Show was staged, but a display of cultivated wild flowers was given. At this function a collection for the Comforts Fund was in operation, and a substantial sum was collected.

The matter of Country Membership Subscription was placed before a special general meeting, which decided that the subscription should be reduced from 15/- to 10/6. A further motion to increase the Ordinary Members subscription from £1 to 21/- was defeated at a later special meeting.

At the request of the Committee, Messrs. A. G. Hooke and A. S. Chalk made a survey of the finances of the Club, and their report must guide future spending policy over this difficult period.

In accordance with the Club's policy of publishing Handbooks on natural history subjects, Mr. C. L. Barrett was authorized to inquire into the matter of a publication on Fungi. The Committee approved of Mr. Barrett's suggestions and, as a result, a book written by Mr. J. H. Willis has been prepared.

During the year we have welcomed to our meetings overseas naturalists and members of interstate naturalists clubs, and have been pleased to see some of our country members from time to time.

A comprehensive expression of thanks is extended to all members and friends of the Club who have given of their time and energy towards the advancement of the Club and its activities.

L. W. COOPER, President.

F. S. COLLIVER, Secretary.

FIELD NATURALISTS' CLUB OF VICTORIA
BALANCE SHEET ON 30th APRIL, 1941

LIABILITIES

Late Dudley Best Fund	£50 0 0
Subscriptions paid in advance	7 17 0
Special Trust Account (in Savings Bank)	12 15 3
E. S. & A. Bank Overdraft (including outstanding cheques)	105 9 9
Comforts Fund Money to be paid over forthwith (Admission money and donation at Wild Flower Exhibition held in Oct. 1940.)	5 9 5
	<hr/>
	£181 11 5
Balance, being Surplus of Assets over Liabilities	1,498 18 5

ASSETS

Arrears of Subscriptions	£103 0 0
Estimated to realize	£60 0 0
State Savings Bank—	
General Account	£81 14 7
Special Trust Account	12 15 3
	<hr/>
Investments—	94 9 10
E. S. & A. Bank Fixed Deposit	
“Best” Fund	£50 0 0
E. S. & A. Bank Fixed Deposits	200 0 0
Commonwealth Bonds—face value	600 0 0
(Market Price on 30/4/41 was £633/6/3.)	<hr/>
	850 0 0
Library, Furniture and Epidiascope—	
At Insurance value	650 0 0
Stock on hand of Books and Badges—	
At valuation—	
<i>Fern Book</i>	£23 0 0
<i>Plant Census</i>	—
<i>Shell Book</i>	—
Club Badges	3 0 0
	<hr/>
	26 0 0
	<hr/>
	£1,680 9 10

Audited and found correct.

A. S. CHALK
A. G. HOOKE,

Hon. Auditors,

JOHN INGRAM, Hon. Treasurer.

FIELD NATURALISTS' CLUB OF VICTORIA
STATEMENT OF RECEIPTS AND EXPENDITURE, FOR 12 MONTHS ENDED 30th APRIL, 1941

RECEIPTS		EXPENDITURE	
Balance at Banks on 30th April, 1940 :—		<i>Victorian Naturalist</i> —	
State Savings Bank credit	£57 1 7	Printing	£173 7 6
Less E. S. & A. Bank overdraft	48 1 0	Illustrating	53 16 2
		Despatching	6 13 9
			£233 17 5
Subscriptions—		Reprints	2 9 6
Arrears	£45 15 0	List of Members (May 1940)	14 0 0
Current	194 13 7	Postage and Freight	6 14 9
In Advance	7 17 0	General Printing and Stationery ..	15 4 6
	£248 5 7	Rents—	
Cash Sales of—		Royal Society's Hall ..	£16 0 0
<i>Victorian Naturalist</i> ..	£16 18 3	Royal Society's Care-taker	1 10 0
<i>Shell Book</i>	1 4 6	Committee Room ..	2 15 0
<i>Fern Book</i>	1 14 4		
<i>Census of Plants</i>	4 12 7	Library	20 5 0
Badges	17 0	Donations—	8 13 8
		Advisory Council for Flora and Fauna	£4 4 0
Advertisements (in <i>Naturalist</i>) ..	1 7 0	A. & N.Z. Assoc. for Advancement of Science	1 1 0
Sale of Surplus Library Books	2 15 0		
Interest Received—		Donation to Club's Secretary	10 10 0
"Best" Fund Fixed Deposit £50 @ 3% ..	£1 10 0	Red Cross Fund	8 5 6
Fixed Deposits £200 @ 3%	6 0 0		
Savings Bank Current account	1 4 3	Wild Flower Exhibition expenses ..	24 0 6
Commonwealth Loans	23 8 9	Diamond Jubilee expenses	3 18 6
		Barrier Reef Film—	33 12 7
		(Amount paid to Mr. Marshall) ..	8 10 0

BREEDING THE DRAGOON-BIRD

By ARNOLD HIRST, Sydney

Although limited in its distribution to Eastern Queensland, from Cape York to the border of New South Wales, the Dragoon-bird or Noisy Pitta (*Pitta versicolor*) is not difficult to acclimatize to lower latitudes; and from my experience of the species over the past two winters I have found that, given proper living conditions, it may be bred with little difficulty in captivity.

The pair which I succeeded in breeding from last year was purchased from Mr. Smith, of Brisbane, in November of 1938, and on arrival they were placed in a section of the large aviary that seemed to me to be best suited to their native conditions.

Being fully-grown birds when caught, it was not to be expected that they would settle down immediately in their new abode; but, notwithstanding the strangeness of their surroundings and the discomforts of transport which they had undergone, they appeared to be little affected by the experience. As is their habit during the off season, they continued to live contentedly apart until the following year, when it was decided to transfer them to an adjoining aviary where there was less likelihood of their being disturbed should they decide to nest.

The layout of this aviary is different from the other in that at the extreme back there is a rockery and waterfall. The foreground is open and carpeted with buffalo grass, but flanking both sides of the rockery are palms and some shrubs, which provide the shade and cover that is essential to the contentment and well-being of these birds of the dense undergrowth.

Although the breeding season of *P. versicolor* begins about October and continues into January, it was not until December of the year following their arrival that the pair which I have decided to build. The site chosen by them for the first nest was on the ground at the back of the aviary, where the cover is densest. It was a large, dome-shaped, loosely-built structure, with an entrance at the side, and for support was placed between some rock-work and the stem of a large shrub, which also protected it from above.

Because this section of the aviary is purposely allowed to be overgrown and is therefore rarely attended to, I was not aware of the existence of the nest until the young birds were well advanced. I am unable on this account also to say what number of eggs was laid. I believe that four is the usual number, but eventually two well-developed chicks emerged from the nest, and were regularly fed by both parents until the hen again went to nest the following month.

On this occasion the nest was placed in the centre of a dense clump of dead tea-tree, about six feet from the ground. In many

PLATE III



Young Dagoon-birds (*Pitta versicolor*), bred December, 1939.



The Dagoon-birds' Nest in the aviary, placed on dead tea-tree about 6 feet from the ground.

respects this nest was the most promising imaginable. It was beautifully constructed and comfortable looking, and in due time at least one well-developed chick could be seen without too close an investigation. It was therefore all the more remarkable, not to say disappointing, to find a day or so later that the nest was empty, and no trace of the occupant or occupants was to be found anywhere.

It was at first thought that rats were responsible for the trouble, but as the aviary is rat-proof, and a careful search having failed to reveal any flaw or opening in the defence, it must remain a mystery what happened to the nestling or nestlings that it contained.

Although Pittas may be kept in adult life on a diet of raw minced meat, I attribute my success in the rearing of the young birds entirely to the earthworms and garden snails which are to be had for the searching in any quantity. On leaving the nest *P. versicolor* is fully feathered and has much the same markings as the adult bird, though without its lustre until after the first moult; then, apart from its size and the gapes which are retained for some time afterwards, there is little to distinguish it from an adult bird.

The Pitta is naturally an exceedingly shy bird, and it is difficult, if ever possible, to gain the full confidence of the adult birds; but one of the young birds which I succeeded in breeding will accept offerings from my hand, and while I am digging in the aviary will follow me about for earthworms, which it pounces upon with its characteristic suddenness as they are unearthed.

THE BREAKING-UP OF THE GENUS *CLEISOSTOMA* IN AUSTRALIA

By the REV. H. M. R. RUPP.

In connection with the article under the above title in this journal for April 1941, my attention has been called to an error in nomenclature. Miss Joyce Vickery, of the National Herbarium of New South Wales, has pointed out to me that notwithstanding my footnote on p. 218, the name *Sarcanthus gemmatus* cannot stand. As stated in the note, the plant in question was originally named by me *Cleisostoma gemmatum*; but since this specific name had to be abandoned because it had previously been applied to a different species, it thereupon automatically ceased to have any standing, and cannot be revived for the Australian plant in any circumstances. No. 4 in my list on the same page, therefore, must retain the specific name which I gave it when *gemmatum* was abandoned; and should be known, if my treatment of *Cleisostoma* in Australia is accepted, as *Sarcanthus purpuratus* (Rupp) Rupp. The duplication of the author's name in this way may seem unnecessary; but Miss Vickery points out that otherwise the history of the species is incomplete.

THE VALUE OF PLANTS TO MANKIND

By L. W. COOPER, Melbourne
(Presidential Address for 1940-41)

Someone has said, and I think rightly so, that the soil is nature's greatest gift to mankind. Without the soil we could not exist, and Nature has preserved it for our use by clothing it with vegetation of various kinds, depending on climate and other factors; this vegetation varies in size from pygmy plants only an inch or so high, up to the giant redwoods of California or the eucalypts of Gippsland, and in kind from the lowly algae and mosses right up to the orchids and composites.

Then man comes into the picture, and, to enable him to grow his crops and pasture for his sheep and cattle, he clears away this covering; if the clearing is done wisely no great harm is done, but if not we get the conditions which obtain now in our own mallee country, where every bit of vegetation has been cleared away for hundreds of square miles. Picture for yourselves a farm in the Mallee with no plants on it, a hot summer day, the soil as dry as dust and a strong north wind blowing. The top soil is absolutely blown away.

Mr. J. R. Aird, Chief Irrigation Officer of the State Rivers and Water Supply Commission, says that the loss of productivity in Victoria due to wind erosion is £500,000 a year, and to this must be added the cost due to the cleaning of the irrigation channels and the removal of the sand from the railways and roads. Most of this loss would have been saved if sufficient of the original scrub had been left to act as a breakwind.

Then consider our mountain ranges; these are our natural water catchments and storages. When rain falls on hills that have the original vegetation left on them the run-off is clean, steady and continuous—ideal conditions for filling our reservoirs and irrigation channels with water. But where man has been busy with his axe, his fire-stick and his cow (and the last is largely responsible for the other two), what do we find? After the same rainfall the run-off is sudden and dirty; it washes away the soil from the sides of the hills and carries it into the reservoirs and we have an alternation of floods and empty rivers with all the destruction that floods cause.

Mr. Aird says that the loss of productivity in Victoria due to water erosion is two and a half million pounds a year. He also states that it costs Victoria £60,000 a year to clean out irrigation channels, £40,000 for the railways, the Country Roads Board and the various municipalities to keep their roads open, while repairs due to water erosion cost another £100,000. In fifteen months the Eildon weir has accumulated silt equal to 1,000 acre feet. All this makes a very heavy cost just to provide grazing for a few hundred head of cattle in our mountain ranges.

Mr. Aird further states that in the United States 31,000,000 acres have been completely ruined by erosion, and that in our Mallee one dust-storm will remove eleven million tons of soil.

Next, let us consider the value of plants in keeping the atmosphere fit to breathe. As you all know, we, in common with all the animal kingdom, are continually breathing in oxygen from the air and exhaling a corresponding quantity of carbon dioxide. All our domestic fires, our industrial furnaces, our motor-cars and trucks, as well as all our steam locomotives, are continuously burning oxygen and pouring out streams of carbon dioxide into the air. If there were no counterbalancing action going on it would be only a matter of time before the oxygen content of the atmosphere would be so diminished and the carbon dioxide content so increased that life would be no longer possible.

Here is where the value of plants comes in. The plants breathe in this carbon dioxide through the stomata, or breathing pores in their leaves, it passes into the intercellular spaces and thence through the cell walls into the cells themselves; here it meets with the water and mineral salts drawn from the soil by the roots, and in the presence of the chlorophyll (the green colouring matter of the leaves), and of sunlight (and both of these are essential), the carbon of the carbon dioxide combines with the hydrogen and oxygen of the water to form the various substances of which the plant is composed, chiefly, of course, cellulose, starch and various sugars. The oxygen from the carbon dioxide is set free and passes out in the reverse direction into the atmosphere to continue the cycle once more.

Now let us consider some of the plants which are so useful because of their medicinal value. From the very earliest time mankind has turned to the vegetable world to afford him some relief from the various aches and pains that have afflicted him, and through the ages he has tried every part of every kind of plant that he came across—roots, stems, bark, leaves, seeds, pods, etc. Some no doubt were very beneficial, some did him no good and no harm; but the faith cure worked then just as well as it does now; other plants were definitely harmful.

It would be interesting to speculate just how long it took primitive man to find out, for example, that when he suffered from some digestive disorder if he chewed the seeds of the castor-oil tree he found relief, but if he used the seeds of the strychnine plant he found trouble at once.

Until the sixteenth century it was considered that plants with heart-shaped leaves were useful for curing diseases of the heart, hence many plants have "hearts-ease" for a common name, those with kidney-shaped leaves were good for kidney troubles, and so on, while walnuts from the resemblance of the fruit to the convolutions of the brain, were of particular value in disorders of the brain.

Theophrastus, a Greek historian, who lived about 300 B.C., described about 500 species of plants which were used for their medicinal value. In our grandmothers' days each cottage had its own garden in which were grown the various herbs used in doctoring the household, such as Balm, Comfrey, Rue, Fever-dew, Celandine, Marshmallow, Tansy, Pennyroyal, Yarrow, etc. Nowadays, thanks to the manufacturing chemists, our pharmacy stores have their shelves stocked with hundreds of various pills, tinctures, extracts, powders, and so on, all made to definite standards, so that our physicians can prescribe so many drops of this and so many ounces of that with the certainty that the resulting medicine will have the best effects on the patient.

Let us look at a few only of these plants, there are hundreds of them. First, that which gives us our morphine. This is obtained from a poppy, *Papaver somniferum*, which has a very large seed capsule, usually two to two and a half inches in diameter. When this capsule is fully formed, but before it is ripe, incisions are made in the skin and the juice which exudes is allowed to harden, and is then scraped off; this forms the rude material from which the morphine is extracted. The best grade of morphine is made from poppies grown in Asiatic Turkey. Second-grade plants are grown in India and China, and the product from these, known as "opium," is used for less reputable purposes.

Next, consider the plant from which we get our cocaine. This is derived from the leaves of a plant, *Erythroxylon coca*, which is a native of the higher altitudes of Peru and Bolivia in South America. It is of value as a local anaesthetic, particularly in dentistry. The cocaine plant has nothing to do with that from which we get our cocoa and chocolate; these are made from the seeds of a plant called *Theobroma cacao*. Our word "Cocoa" should be called "Cacao," and the dictionary gives this as an alternative spelling.

On the other hand, *Erythroxylon coca* has nothing to do with the palm from which we get our coco-nut, *Cocos nucifera*; this palm gives us a number of valuable products used in cooking and confectionery, in the manufacture of soap and cosmetics, and, since the discovery of the hydrogenation of oils and fats, in the making of margarine.

Another very important plant is that which gives us our quinine. This is obtained from the bark of a plant of the genus *Cinchona*, native to Peru, but now grown very extensively in the Dutch East Indies. (This plant is in the Rubiaceae, the family containing the Coprosma, Bedstraw, etc.) The alkaloid which is extracted from this bark, quinine, is a specific against the parasite which causes the disease known as malaria. It is safe to say that if it were not for quinine the tropics would not be habitable to the white race.

Strychnine is obtained from the seeds of a plant, *Strychnos nuxvomica*, in the Loganiaceae (the family in which our garden Buddlaea occurs). In very small doses it is a very valuable heart stimulant; in large doses a powerful poison.

Digitalis, another valuable heart stimulant, is obtained from the leaves of the garden foxglove, *Digitalis purpurea*.

Cascara is obtained from the bark of a plant, *Rhamnus Purshiana*, grown chiefly in the north-western States of the U.S.A. This is in the family Rhamnaceae, the same as our Pomaderris and Spyridium.

Many plants are of value because of their essential oils. We think first of all of our eucalyptus oil. There are some 200 different species of eucalypts and some 200 different kinds of eucalyptus oil. The oil we know best, and which we take in doses of five drops on a lump of sugar, is distilled from the leaves of *E. globulus* and *E. dumosa*. In Kangaroo Island, in South Australia, *E. cneorifolia* is used. This oil consists chiefly of a substance known as Cineol. The B.P. standard is 55%, the U.S.A.P. is 70%. *E. citriodora* yields citronellal, largely used in the manufacture of perfumes, and until the coming of the pyrethrum fly-spray was largely used to keep the mosquitoes away from us in the summer. *E. dives* yields phellandrene. This is most valuable in that it enables the metallurgist to separate the metallic minerals from the valueless gangue in the ore. It is used in large quantities in Broken Hill, Mount Lyell and other mining centres. *E. globulus* leaves yield about 0.8% of oil; *E. dumosa*, 1%; *E. dives*, 2.2%; *E. amygdalena* is also used for phellandrene.

Recently, an essential oil has been extracted from *Melaleuca alternifolia*, one of the tea-trees, which is native to the northern parts of New South Wales. It has a very high germicidal value and is marketed as "titrol." Other essential oils, made from the various mints and from oranges, are used as flavouring as well as for medicinal purposes.

Next, let us consider some of the plants which are so very valuable because they yield us our textiles.

First in importance is the cotton-plant, one of several species of *Gossypium*. These plants require a warm and moist climate and so are grown in the southern States of the U.S.A., in Egypt, India and Queensland. Cotton is said to be the chief fibre product of the vegetable world. Among its uses are, of course, dress goods, sheeting, etc., and in the cords which give strength to motor tyres. Cheaper qualities are used in mattresses, upholstery, etc. Cotton wool (or absorbent cotton as it ought to be called as there is no wool in it at all) is cotton treated to remove the oily coating on the hairs and should absorb up to eighteen times its own weight of water.

Next comes linen. This is the fibre occurring in the stem of a

plant, *Linum usitatissimum*, chiefly grown in cool, moist areas, such as Ireland, Belgium and Russia. Owing to war conditions it is now being grown in Australia. It is used in the better class of dress-goods, damask, lace, curtains, canvas, tarpaulins, fire-hoses, etc.

Hemp is properly the fibre from the stem of *Cannabis sativa*; it is used in rope, cordage, packing for pumps, etc., also in upholstery. Indian hemp is obtained from other plants, such as *Crotalaria* and *Hibiscus*.

Jute is from the inner bark of the stem of *Corchorus* species, chiefly grown in the river valleys of India, in Bengal. It is used in bags, sacks, etc., as a backing in linoleum, and in the cheaper kinds of string and twine.

Then there are plants which are very useful because of the sap which exudes when the bark is broken or cut. Chief of these is, of course, the rubber-tree, botanically known as *Hevea brasiliensis*, the species name showing that it is a native of Brazil. It is now, however, most largely grown in Malaya and the Dutch East Indies. The bulk of the rubber grown is used in motor tyres and tubes, and in conveyor belts, but there are thousands of other uses in every walk of life, and rubber is one of those things which civilization must have.

Another industry based on the exudation from cuts made in the bark of a tree is that which makes the chewing-gum so much used in the U.S.A. This is obtained from a large forest-tree grown in Mexico, *Achras sapota*. This tree must be seventy years of age before tapping, and the yield is about $2\frac{1}{2}$ lbs. per tree per year.

The Oak tree, *Quercus suber*, is another very important plant; this gives us our cork. The tree is a native of Spain; it can be stripped of its bark, which is the cork of commerce, every eight to twelve years.

Many plants have been used down the ages for the purpose of dyeing, but these have now been almost entirely displaced by artificial coal-tar dyes.

In the manufacture of paper many kinds of plants have been used from time to time, and at the present time paper is another absolute necessity of civilization. The name is derived from *Cyperus papyrus*, a rush in use as far back as 2500 B.C., and some ancient rolls are still in an excellent state of preservation. Paper, as we know it to-day, dates from about 150 A.D., when it was in use by the Chinese. Until the last few years practically all of our paper was made from various soft-woods, such as spruce, fir, pine, etc., but now the Australian hardwoods are being used in various mills in Tasmania and Victoria.

Oil-producing plants form another very valuable series. The oil is produced by pressing the seeds; most of these are non-drying, and may be used in a variety of ways, as food, e.g., olive oil;

lubricating purposes, for fuel, etc. A few only are drying oils, like linseed oil, and these are used in the paint industry in enormous quantities.

There are many other uses for which plants are extremely valuable; I have not touched on the question of timber for furniture, household fittings, railway sleepers, bridge and jetty building, etc., nor yet on that most important of all subjects, plants which are used for food, and for our drinks and smokes; the trees that give us the gum for the back of our postage stamps and envelopes, and many others. Possibly, however, sufficient has been said to stimulate awareness of the great influence of plants upon human welfare.

THE LATE JAMES LIDGETT, F.E.S.

Rather more than half a century ago, James Lidgett, then a youth in his teens, was elected a country member of the Victorian Field Naturalists' Club. His interest lay chiefly in entomology, but association with members considerably widened his knowledge of other branches of natural history. The Brittlebank brothers were neighbours, and the Werribee Gorge was attracting geologists of note, even from overseas. The eminent oologist, A. J. Campbell, was a frequent visitor to the district, gathering data for the classic *Nests and Eggs*, and James Lidgett was often present on those private rambles, as well as attending the Club excursions. On more than one occasion he rode to Melton, when the Club visited that locality under the leadership of Mr. Keartland.

Long before he attained his majority our late member had contributed papers, which were read at the monthly meetings. One, "Colour Variation of Some Australian Lepidoptera," was supplemented by coloured drawings, and commented on by the President, Professor W. Baldwin Spencer, Mr. Anderson, co-author of *Victorian Butterflies*, and others. This was no mean achievement for such a youthful member, living too far from the city to have access to collections and literature. About this time he had a "Bibliographical Catalogue" on matters pertaining to Lepidoptera in course of preparation.

Later Mr. Lidgett specialized in Victorian Coccidae, having this field of study more or less to himself. Many new species were described by the Government Entomologist in Ceylon, and recorded in the *Victorian Naturalist*, some of which were named in honour of the collector.

Never a man to do things by halves, it was inevitable that his hobbies took a secondary place when, in the fulness of time, James Lidgett assumed the greater responsibilities of life. It was equally characteristic of him that he excelled in his occupation as a breeder, and, later, a judge, of pure stock.

In 1933 he found time and opportunity to again join the Club. Whatever diffidence he may have felt about doing so was dispelled by finding that there were still many active members, with kindred interests, who remembered him when he attended the meetings. Distance prevented his regular attendance, but did not dim his interest in the Club's activities. Particularly did he approve of the inclusion of colour plates in the journal.

It is a matter for regret that ill-health overtook Mr. Lidgett so soon after his re-election. A few weeks ago, his condition becoming worse, he was brought to the city, but on June 17 he passed away, at the age of 67 years. Conscious of the loss of a valued member, the Field Naturalists' Club will feel the deepest sympathy for his family.

BLANCHE E. MILLER.

FURTHER NOTE ON THE CABBAGE-BUTTERFLY

By R. W. ARMITAGE, Melbourne.

At the August 1940 meeting of the Club I submitted some notes on the Cabbage White Butterfly (*Pieris rapæ*). In these I said that it would seem advisable to ask the Agricultural Department to procure from Europe or North America parasitic wasps to keep the pest within bounds, otherwise there was nothing to prevent its rapid dispersal throughout the temperate parts of Australia. During the past year the pest has enormously increased and spread.

Members of the Club may have noticed a short paragraph in the Press to the effect that our Department of Agriculture has procured from New Zealand a supply of the Chalcid wasp (*Pteromalus puparum*) which will be set free in this country in an endeavour to check the Cabbage-Butterfly pest. This is very gratifying news.

In England there is another effective parasite—a Braconid wasp. The Cambridge Natural History says of this, "To *Apanteles glomeratus* we are indebted for keeping our cabbages and kindred vegetables from destruction by the caterpillars of the white butterflies. The larvæ of the various species of *Pieris*, as well as those of other Lepidoptera, are attacked by this tiny insect, the masses of whose cocoons may be frequently found in and near cabbage gardens."

With regard to the number of local broods per year, there seems to be no definite well marked number, as the butterflies were to be seen flying freely on every sunny day since August 4, last year, and at any time freshly laid eggs, and larvæ in all stages could be found on their food plants up to the end of May. In early spring the male butterflies far outnumbered the females in the ratio of about 16 to 1, while towards the end of autumn the females outnumbered the males in the proportion of 8 or 9 to 1. These figures are based on specimens actually captured on sunny days, and identified.

It seems doubtful whether spraying with liquids or dusts will ever effectually keep the pest in such check that it will cause little appreciable damage, for there will always be many sources of supply of fresh hordes from unsprayed plants. These sources, on the other hand, would not escape the attention of the Chalcid or the Braconid parasites.

In a private garden near Landcox Park, Brighton (Victoria), I counted, in April, up to sixty larvæ in all stages of growth on the skeleton of one leaf of a cabbage trying to go to seed, and over 700 on the whole plant. There were some eggs as well.

During the season very much damage has been done to cabbage gardens in the Moorabbin district.

It may be of interest to note that the plant commonly called "Honesty" or Moonwort (*Lunaria*), although one of the Cruciferæ, does not seem yet to have been attacked by the pest.

CORRECTIONS

It is regretted that printers' errors occurred in the article, "An Early Victorian Botanist," by the Rev. H. M. R. Rupp, in the June issue of this journal. The home of the late William Moodie was not Wando Vale but Wando Dale, and corrections to this extent should be made in lines 11, 16 and 21 of the article.

Field Naturalists' Club of Victoria

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J. H. Willis.

EXCURSIONS

SATURDAY, JULY 12.—National Museum. Subject: General Geology. Leader: Mr. A. C. Frostick. Meet at the Russell Street entrance at 2.45 p.m.

SATURDAY, AUGUST 9.—National Museum. Subject: Australian Mammals. Leader: Mr. C. W. Brazenor. Meet at the Russell Street entrance at 2.45 p.m.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

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Vol. LVIII, No. 4



AUGUST, 1941



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, AUGUST 11, 1941

1. Welcome to members of kindred societies.
2. Minutes.
3. Apologies.
4. Presentation of Natural History Medallion to Mr. F. Chapman, A.L.S., Hon. F.R.M.S.
Introductory Remarks: The President.
Presentation: His Honor Sir Frederick Mann, Chief Justice of Victoria.
Reply: Mr. Chapman.
5. Lecture by Mr. Chapman, entitled "Rambles of a Geologist in an Australian Garden."
6. Correspondence.
7. Report of Excursion.
8. Election of Members.

AS ORDINARY MEMBER	PROPOSER	SECONDER.
Miss Jean Petty, "Ellerslie," Main Road, Doncaster.	Mrs. M. A. Legge.	Mr. L. W. Cooper.
Mr. J. Mollison, 119 Leopold Street, South Yarra, S.E.1.	Mr. J. H. Willis.	Mr. P. Crosbie Morrison.
9. Nomination of Members.
10. General Business—
Forthcoming Excursion.
Questions by Members.
11. Nature Notes and Remarks by Exhibitors.
12. Conversazione.

The Victorian Naturalist

Vol. LVIII.—No. 4 August 6, 1941

No. 692

PROCEEDINGS

The monthly meeting of the Club was held on Monday, July 14, at 8 p.m. The President, Mr. P. Crosbie Morrison, presided over an attendance of about sixty members and friends, the inclement weather causing a number of members to stay at home.

SUBJECT FOR THE EVENING

Mr. J. H. Willis gave a very interesting lecture on "Fungi," dealing with many of the species mentioned in the book, *Victorian Fungi*, recently published by the Club. The lecture was illustrated by forty lantern slides, many of them coloured by Mr. H. T. Reeves.

NATURAL HISTORY MEDALLION

The President announced that this had been awarded to Mr. F. Chapman, and that the presentation would be made at the August meeting of the Club by the Chief Justice, Sir Frederick Mann.

ELECTION OF MEMBERS

Miss V. G. Mollison was elected as an Ordinary Member and Mr. J. D. Waterhouse as a Country Member.

REPORT OF EXCURSION

Mr. A. C. Frostick reported a very successful excursion to the Geological Section of the National Museum on July 12.

NATURE NOTES

The presence in Melbourne of albino blackbirds was mentioned by Messrs. L. W. Cooper, W. H. Ingram and C. H. Shewan; and of an albino wattle-bird at Box Hill by Mr. R. G. Painter.

Mr. V. H. Miller drew attention to the state of Sherbrooke Forest and suggested that the Committee draw the attention of the Forestry Commission to this with a view of getting them to clean up the Forest and of closing it to the public for two years to allow the damage to be repaired.

EXHIBITS

Messrs. Willis, Stewart and Hammet.—Fungi illustrating the lecture.

SEP 15 1941

Mr. R. G. Painter.—Garden-grown specimens of several native plants.

Mr. Ivo C. Hammet.—Garden-grown specimens of native plants and *Grevillea Barklyiana* from Labertouche.

Mrs. J. J. Freame.—Dragon Fish from Edithvale.

CHOOSING A NATIONAL FLOWER

Which native flower should be regarded as the national emblem of Victoria? This question has frequently been addressed to the National Herbarium, and the Director (Mr. F. J. Rae), together with Messrs. F. Morris and J. H. Willis, is keen to have a decision reached on the point. As the result of a letter from Mr. Rae, discussion took place at the last meeting of the Field Naturalists' Club Committee and it was resolved to give general consideration to the subject at the September meeting of the Club.

Meanwhile, it may be said that several plants have been advanced for the honour of being regarded as Victoria's emblem. Among them are *Acacia pycnantha*, the Golden Wattle; *Epacris impressa*, the Common Heath; *Eriostemon obovalis*, the Fairy Waxflower; *Brummonia australis*, the Pin-cushion; *Tetratheca ciliata*, the "Pink-eye"; and *Correa rubra*, the Native Fuchsia, which already figures on the badge of the Field Naturalists' Club.

Members are asked to think over this engaging subject and either write their views to the secretary or be prepared to state them briefly at the September meeting.

It is interesting to note that most of the other States have made selections, either tentatively or definitely, of their floral emblem. New South Wales favours the Waratah; Tasmania the Blue Gum; South Australia the Sturt Desert Pea, and Western Australia the Kangaroo Paw. Queensland public opinion tends towards the Jacaranda and the Poinciana, but, as neither of these is a native plant, botanists in the northern State are inclined to favour *Dendrobium phalaenopsis*, the regal Cooktown Orchid.

ILLNESS OF THE SECRETARY

Mr. F. S. Colliver, Hon. Secretary of the Club, has been seriously ill for several weeks, but is now, members will be glad to learn, out of hospital and well on the way to recovery. It will be some months, however, before Mr. Colliver is completely restored to health, and the Committee has invited Mr. Noel Lothian to act as Hon. Secretary in the meantime.

DEATH OF MR. ERNEST AUSTIN

A wide circle of nature-lovers regret the death of Mr. Ernest G. Austin, squire of Borriyalloak, Skipton, Victoria, who died on July 20 as the result of injuries received when thrown from a horse. Mr. Austin, who was 74 years of age, was a Melbourne Grammar School boy who became a distinguished pastoralist and one of the best of our bush naturalists. He was specially devoted to birds, and upon this subject he contributed frequently, and for many years, useful observations to the Nature Notes column of the Melbourne *Argus*. Borriyalloak Station is a very inviting spot, and it was a rare pleasure to wander about its broad acres with Mr. Austin and to listen to his stories, ranging from quaint little notes on snipe to the tests he had made regarding the relative grass-eating capacity of sheep and kangaroos.

A.H.C.

VICTORIAN TUNAS AND SOME RECENT RECORDS

By D. L. SERVENTY, Marine Biological Laboratory,
Cronulla, N.S.W.

In Pamphlet 104, of the Council for Scientific and Industrial Research, the author has given a general account of the occurrence in Australian waters of the nine species of tuna fishes on the Australian list. The Victorian data on distribution may be stated in added detail, together with further southern Australian records gained since the preparation of the Pamphlet. Descriptions of the species, with illustrations, are provided in that publication and need not be repeated here.

According to McCulloch's checklist of Australian fishes (*Austr. Mus., Mem. V*, 1929) only two species of tuna are recorded from Victoria, namely, *Thunnus maccoyii* and *Sarda chiliensis* (= *australis*). Two others were added in my Pamphlet already referred to and the fifth record is made in the present article. Thus the following species are now known to occur in Victorian seas:

1. Southern Bluefin (*Thunnus maccoyii*).
2. Albacore (*Thunnus germon*).
3. Yellowfin Tuna (*Neothunnus macropterus*)—new record.
4. Striped Tuna (*Katsuwonus pelamis*).
5. Bonito (*Sarda australis*).

SOUTHERN BLUEFIN (*Thunnus maccoyii*)

Commercially this is the most important tuna species in Australia and the one species of the group which is really abundant and widespread in Victoria. Though closely allied to the great Common Tunny (*Thunnus thynnus*) of Europe, the general run of fish likely to be encountered in Victoria is quite small, about 6 to 40 pounds in weight.

As has been discussed in C.S.I.R. Pamphlet 104 the inshore south-eastern waters of Australia are only a nursery ground for the species, individuals of which, after spending three seasons here as young, immature fish, leave for other parts at the onset of maturity. It is likely that two separate breeding stocks are represented in the Victorian area: (a) The eastern group which migrates between Sydney and southern Tasmania, working westwards as far as Port Phillip; and (b) the western population ranging from South Australian waters around the coast to Portland and Port Fairy.

The eastern group has been more closely studied so far. Except for the region around Cape Everard to Gabo Island, where the fish may be encountered from mid-winter onwards passing up the eastern littoral from Tasmania, the main Victorian season covers the summer months. An idea of its progression may be gained from the accompanying graph of three seasons' catches

at Western Port, compiled from the fishing diary of Mr. E. W. Fisher, of Hastings, who kindly made the data available. It shows that the tuna first appear in numbers in December, the climax being reached in February-March. These fish have arrived from southern New South Wales, where similar data, based on the catches of the M.V. *Warreen*, show that the peak of the season is about October. After leaving Victorian waters the Bluefin pass down the eastern coast of Tasmania, where the main season extends from the summer to about the end of July.

At present no fishery of any moment takes place within Victorian waters, though canneries have recently commenced operations at Flinders Island, in Bass Strait, and at Eden, just beyond the border in New South Wales. During the summer months a certain amount passes through the Melbourne Fish Market, under the name of "Bonita," to supply the bait demands of other fishermen. The great bulk of these supplies comes from Eden, by land transport through Orbost.

There are no recent records of the large adult Bluefin being caught in Victoria, though in 1880 Prof. F. McCoy recorded a Victorian specimen in the National Museum which measured 5 feet 10 inches in length. The specimen is still in the collection and is labelled as coming from Portland, thus belonging in all likelihood to the western population. The exact date of capture is unknown.

The illustration shows a specimen netted at Albany, Western Australia, in March, 1939, weighing 264 pounds, and measuring 5 feet $4\frac{1}{2}$ inches in length. Like all the large Bluefin got in this region in the summer it was in near spawning condition and hence not feeding. Such fish will not take the hook and so do not interest big-game anglers, who, however, put in a good deal of fruitless endeavour at Albany a few years ago to exploit these large tuna as a big-game attraction. It is not yet known where these large individuals go to in the non-spawning season.

Though the species was formally described by Count Castelnau in 1872, from specimens obtained in the Melbourne Market, it had been recorded, "as a not uncommon visitor," by McCoy in the *Intercolonial Exhibition Essays, 1866-67*. McCoy listed it as a new species, *Thynnus australis*, but, as he omitted a technical description, the name lapses as a *nomen nudum*. He gave an excellent description, with coloured plate, in the *Prodromus of the Zoology of Victoria*, Vol. I, Decade V, 1880, Pl. 44, p. 21, though he placed the local form in the synonymy of the European *T. thynnus*.

ALBACORE (*Thunnus germon*)

This form is an east Australian and east Tasmanian one which has been caught by the *Warreen* in the eastern part of Bass Strait

PLATE IV



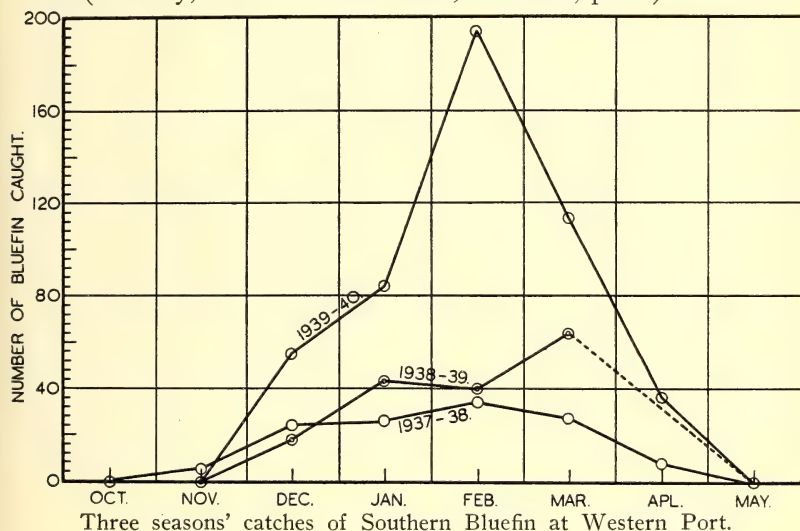
Southern Bluefin Tuna, Albany, Western Australia; weight, 264 lb.

Photo.: J. A. Jeffrey.

and only off Gabo Island in the Victorian area. It does venture farther west on occasion, however, and Mr. Fisher informs me that he caught a 13¼ lb. Albacore in Western Port on February 21, 1938. He fished continuously in the area from October to mid-April that season and during the period had trolled 115 Southern Bluefin. Only one Albacore (10¼ lb.) was taken during Mr. Fisher's subsequent two fishing seasons, during which he caught an aggregate of about 650 Bluefin.

YELLOWFIN TUNA (*Neothunnus macropterus*)

This species may now be added to the fish fauna of Victoria. The only previous record for the southern waters in south-eastern Australia was that established by Zane Grey, who caught a 91-lb. example about 30 miles off Bermagui, N.S.W., on February 26, 1936 (Whitley, *Records Austr. Mus.*, Vol. XX, p. 14).



On December 18, 1940, whilst I was on board the *Warreen*, a specimen weighing 8 lb. 12 oz. was caught on the trolling gear 22 miles south-east of Gabo Island. This position is beyond the edge of the continental shelf, and may be reckoned as in "Victorian waters" for record purposes. A second specimen, weighing 14 lb. 1 oz. was trolled by the *Warreen* on January 18, 1941, 15 miles east of Disaster Bay, N.S.W.; and a third, weighing 19 lb. 10 oz., was taken on April 24 ten miles south-east of Green Cape, practically in the same area.

Taxonomic details of these and other fishes will be reviewed later, but a colour description of these Australian specimens may now be given as no adequate particulars have been published of the local form.

The back is a brilliant blue-black, with the belly pearly-silver. A golden-yellow band runs along the body from the snout to the tail, where the dark of the back passes into the light coloration of the lower parts. There is a narrow stripe of very bright blue along the upper border of the golden band. The first dorsal fin has the spines golden-yellow, with the anterior face of the first spine dark like the back. The webbing is clear with a tinge of yellow in the posterior part. The second dorsal is yellow, edged with black, and the anterior rays are tipped with white. The anal fin is wholly yellow. In the ventral (pelvic) fins the rays are dark with the webbing mostly yellow, in parts greyish. The outer face of the pectoral fin has a golden tone and the inner conforms with the dorsal part of the body. The caudal fin is greyish-black with a yellow streak along the web. In the smaller specimens the fleshy caudal keel is grey; in the larger it is yellow. The sides and lower part of the body are crossed by a number of white transverse lines, there being about 20 altogether or about 11 between the base of the pectoral and the anal fin. The dorsal finlets are yellow, edged with black, and the ventral finlets entirely yellow. The inside of the mouth is black.

This tuna is among the most brilliant of the Australian species when viewed soon after capture, but the glittering colours fade after death. Though it deserves its vernacular name it has been the cause of some confusion with the Southern Bluefin (*Thunnus maccoyii*) because the latter has considerable yellow on some of its fins. Because of this *T. maccoyii* has been erroneously reported as the "Yellowfin" on several occasions. It may be noted that *Neothunnus macropterus*, the true Yellowfin Tuna, is the *only* Australian tuna which has a yellow first dorsal and an entirely yellow anal fin.

Accurately coloured casts of the Yellowfin, painted by Miss M. E. Soady, are now on exhibition at the Australian Museum, Sydney, and at the Marine Biological Laboratory, Cronulla.

STRIPED TUNA (*Katsuwonus pelamis*)

This species is abundant during the summer and autumn on the south-eastern coast as far south as St. Helen's in Tasmania. but it only skirts the fringe of Victorian waters, and has been caught around Gabo Island. I have no records of its occurrence farther west.

It is trolled in the season even far offshore in that part of Bass Strait known to seafarers as the "Paddock," thence mainly along the east side of the Furneaux Group to north-eastern Tasmania.

Normally the Striped Tuna does not occur much farther south than St. Helen's in Tasmania. During the autumn fishing of 1941, however, considerable catches were made as far south as St. Pat-

rick Head, Long Point and Marouard Island. The *Warreen's* most southerly record was Cape Forestier on Freycinet Peninsula (March 26, 1941).

BONITO (*Sarda australis*)

This little tuna, well-known to game fishermen on the New South Wales coast, who often refer to it as the "Horse Mackerel," is not an abundant species in Victoria, though it ranks second to the Southern Bluefin. It was first recorded by McCoy, who gave a coloured illustration and description in his *Prodromus of the Zoology of Victoria*, Vol. II, Decade XVI, 1888, Pl. 155, under the name of Melbourne Pelamyd, *Pelamys schlegeli*. He says of the type: "The only specimen of this fish was caught in Port Phillip Bay on 19th of January, 1877."

Apparently it is only a summer visitor to Victoria. During the several cruises which the *Warreen* has made in Victorian waters since May, 1938, only three examples have been trolled. All were taken early in 1939. One was got off Wilson's Promontory on January 21, another on the following day about 24 miles east of Port Albert entrance, and the third almost at the same spot on February 9. These fish weighed between 4 and 5 pounds, and two, which were females, had relatively large roes. We have a photograph of a specimen taken at Port Fairy in May, 1938, the farthest west record thus far.

Mr. George Mack, of the National Museum, Melbourne, informs me that two specimens are in the Museum collections: one from Port Welshpool, taken on March 8, 1926, and the second from Port Phillip Bay, March 12, 1936. Mr. A. Dunbavin Butcher, of the Fisheries and Game Department, Melbourne, reported that a number were on sale at the Melbourne Fish Market, caught off the Gippsland Lakes on April 29, 1941.

BREEDING THE SATIN BOWER-BIRD

You will be interested to hear that the young Satin Bower-bird which I bred in 1937 is gradually acquiring his adult plumage. At present he is mottled only about the neck and back, but the transformation is proceeding, and it will be interesting to watch developments. Evidently the change is not in any way associated with the moult as this is long over, having occurred during March and April last; but to me the important point about the matter is that it not only determines the question of sex, but completely "torpedoes" the theory of seven years being required for the blue-black plumage to develop. It may be, of course, that Nature's procedure has been upset in this instance by influences associated with the breeding of the youngster in captivity, but I fail to see how the circumstance of confinement could carry with it such marked physiological consequences.

ARNOLD HIRST, (Sydney).

ATTRACTING BIRDS TO OUR GARDENS

By EDITH COLEMAN, Blackburn, Victoria

Most nature-lovers in the outer suburbs of Melbourne have watched with dismay a great decline in the number of native birds that visit our gardens. The chief causes are: Increased population and a corresponding increase in the number of domestic cats; the destruction of indigenous trees and shrubs, and an increase in the number of alien birds which undoubtedly harry the less assertive among the natives.

A few of our birds, as Mr. Chisholm recently pointed out, are adapting themselves to altered conditions, but too many others that once haunted our gardens are now rare visitors. In this district such birds as the Blue Wren, Grey Fantail, Grey Thrush, Peewit, Shrike-Tit, Black-and-white Fantail and Yellow Robin once nested freely in the garden. The lovely Rufous Fantail left us only to nest in the creek-side brush nearby.

That Honeyeaters are still with us in goodly numbers we owe to the many nectariferous flowers grown in our gardens. While native birds show a decided preference for native plants as nesting-sites, they seem to make no distinction between the nectar-bearing flowers of northern lands and our own.

In this garden, 11 miles from Melbourne, we have managed to retain many birds, but Blackbird and British Song-Thrush now dominate.

BELLING THE CAT

When our cat died she was not replaced. During the last years of her life she wore round her neck a small bell, which saved the life of many a songster. It is a practice which might be encouraged among suburban cat-lovers, entailing as it does no greater discomfort than a dog's collar.

We might also do much to attract our own birds by encouraging the planting of indigenous trees and shrubs, as well as nectar-bearing plants, indigenous and otherwise.

In this garden a hedge of fairy fuchsia, planted as cuttings some 24 years ago, is a source of happiness to many birds. Instead of resenting a hard yearly cutting the bushes reward us, and the birds, with hosts of flowers during ten months of the year.

Other species of fuchsia, three honeysuckles, tree-lucernes and culpeas are equally attractive to birds. As long as there are flowers the Honeyeaters do not leave us. Spinebilled and White-plumed species are in the garden throughout the year, but both Regent and Yellow-winged Honeyeaters leave us for a short period.

PLATE V



Salvia patens: The anthers have lost their pollen and no longer spring back into the hood. The stigmas have moved down close to them but are not receptive to any grains of pollen that may remain on the withered anthers. Flowers reduced in size.



Salvia patens: Stamens in the "ready" position within the hood. In the left-hand flower the stigma is already growing downward to occupy the position to which the anthers are swung by the bee. Flowers less than natural size.

SALVIAS AS LURES

Our finest bird lures are salvias, of which there are some twenty species in the garden. It is these I would commend as bird-baits. I grow only perennials and biennials, as time cannot be spared for the replanting of large numbers of annuals. Many of these withstand hard frost and entail no labour beyond cutting back after flowering. And how the Honeyeaters love them! There can be few more satisfying pleasures than to watch a pair of Regent or Yellow-winged Honey-birds, or a pair of Wattle-birds, feeding their babies among the flowers within three feet of a verandah seat, or even closer to a window. The heavy Wattle-birds break a few branches of brittle species such as *S. rutilans*, *S. grahami* and *S. involucrata*, but the plants are so robust that a few branches can well be spared. With judicious choice of species, and fairly sheltered positions for such as are frost-tender, one may have salvia flowers almost throughout the year.

Until a few weeks ago the lovely velvety blue *S. patens* and the paler blue *S. ulignosa* were in flower. At the present time (June 24) the garden is still gay with the rose of *S. involucrata*, red of *S. rutilans* and *S. grahami*, the misty blue *S. farinacea* and the lovely but rather inaptly named white-flowered sage (*S. leucantha*). In this garden the corollas are never white but always of a paler amethyst tint than the rest of the flower.

POLLINARY MECHANISM

Apart from their assets as bird charms salvias are worth growing for the pleasure of studying their marvellous pollinary mechanism, which is quite as fascinating as that of orchids or asclepiads. The hooded flowers provide one of the best examples of protection of essential organs. The mechanism varies in different species, but all follow the same plan.

Briefly, in salvias the connective between the anther cells is lengthened into a more or less curved rod, so that a cell is at each end of it. The rod oscillates on a short filament. The lower cells are usually abortive and contain no pollen. In some species the lower cells are absent. In others they may be clubbed, or spoon-shaped, or like a queer little boot. Although they contain no pollen these abortive cells serve another purpose. Whatever their shape they block the entrance to the nectary. The head of a visiting bee, or bill of bird, pressing against them disturbs the poise of the oscillating connective.

Thus the upper, fertile anther cells are swung down just where they will touch the bee's back, leaving on it a smudge of pollen. The anthers mature before the stigmas, thus preventing self-fertilization. By the time they have lost their pollen, the now mature stigma has lengthened, curving downward to occupy the

position to which the bee swung the upper cells. The pollen-dusted back of a visiting bee will now touch the receptive surface of the stigma.

In large-flowered species such as *S. patens*, the Glory Sage (*S. dichroa*) and the Vatican variety of *S. sclarea*, the action may be clearly followed without use of a lens. It is pretty to see the golden anthers descend from the deep, velvety blue hood of *S. patens* to anoint the scrambling bee. The Spinebill does not allow of such close proximity.

In the Red Sage (*S. horminum*) a bunch of red, or purple, bracts at the top of the spike seems most effective in luring both bee and bird to the very small flowers. I have seen the Spinebill exploring them as expertly as he does those of larger-flowered species. Indeed, in some of the tubular *Salvias* he is tempted to pierce "short-cuts" to the nectar, which the bee afterwards exploits, neither performing any service to the plant.

The flowering stems of the Glory Sage (*S. dichroa*) are sometimes $3\frac{1}{2}$ feet long, 3 feet of which may be densely covered with flowers. The incredible numbers of lavender-blue flowers with white, keeled lips, are freely visited, yet few set seed. This suggests that in its own country (Atlas Mts.) it is pollinated by some agent which has not been introduced here. The illustration shows only small portions of two yard-long inflorescences.

A fascinating feature of this *Salvia* is the remarkable packing of stamens and style in the immature flower. In the bud stage these fit snugly into the deep keel of the lip, which forms a pouch for them. When mature, stamens and style rise up into the hood, to descend only under pressure by bee or bird.

In some species these organs are merely curved over into the throat of the flower rising into the hood, in the "ready" position, at maturity. In other species, such as the Vatican and the Yellow-flower Sages, they are held in the closely rolled lower lip, which beautifully enfolds them until maturity. There are few flowers of their size in which one may so readily follow this gradual change of position in the essential organs.

COLD-SHOULDERING UNWELCOME GUESTS

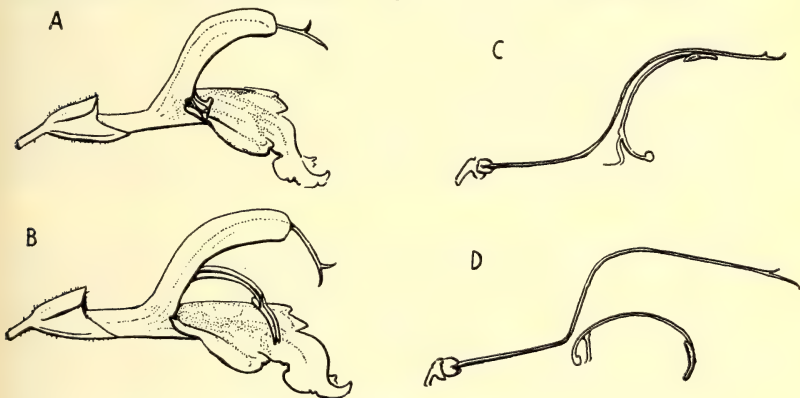
There is another feature of which I have seen no record. As Shakespeare tells us, "Unbidden guests are welcomest when they are gone." Several *Salvias* have developed a pretty plan to cold-shoulder unwelcome guests. The yellow-flowered *S. glutinosa* is a hardy species, still used in Holland to flavour wine and in rural England to marble cheese.

"Marbled with Sage the hardening cheese she pressed," sang Gay, a practice common among the Romans in ancient days. This species certainly makes delicious Sage butter, but I like better its clever notice to unbidden guests.

At the flowering period, *only*, its leaves and stems become coated with minute drops of extremely viscid matter which effectively hold up any creeping visitors that might steal the nectar without touching pollen, or stigma. *When the flowers have faded and there is no longer any nectar to steal, the sticky secretion ceases.*

In the Midnight Salvia (*S. discolor*) both stems and under-surface of leaves are covered with a dense white pubescence that should make unpleasant travelling for ants, slugs, snails or butterfly larvae that could not benefit the plant.

To make inhospitality unmistakable, just before the buds open, the flowering stem, *only*, becomes coated with a viscid secretion, on which one sees many victims too small to master the pollinary mechanism. *When the flower fades and protection is no longer necessary, the secretion ceases.* It seems remarkable that the sticky flow should occur only on the flowering stem.



Yellow-Flowered Sage (*S. glutinosa*) showing pollinary mechanism.

- A. Fertile anther cells within the hood in "ready" position. Forked stigma protruding. Infertile anther cells blocking the entrance to the nectary.
- B. The infertile cells have been pressed by bee or bird, swinging the upper fertile cells downward to touch back of visiting bee, or bill of bird.
- C. and D. The same with calyx and corolla removed to show oscillation of the curved connective on its short filament.

But for exigencies of space one would like to discuss many other features that make *Salvias* so fascinating to nature lovers. They have been popular in English gardens for at least four centuries. Johnson (1856) lists 126 species. Some of these have gone out of cultivation, or have been "lumped." New and more attractive species have been introduced. Hogg (1858) notices only four species. Cobbett, in his delightful "English Gardener" (1829) mentions only two, both red-flowered perennials, which he says should be in every garden. Robinson (1883) lists 27 species, seven of which are not on Johnson's list.

Some of the newer introductions are certainly garden glories as well as bird charms. The Vatican Clary ("Clear-eye"), a variety of *S. sclarea*, is a handsome plant with large hairy leaves. The unfolding of both leaf and tasselled flower-buds is a joy to watch. The beautiful bracts which subtend the flowers (Amethyst, or blue, and white) turn rosy purple, making the plant most decorative long after the flowers have fallen. How the bees love it! So do the Spinebilled and Yellow-winged Honeyeaters. And how prolific it is! Every flower seems to set seed, although I have never attempted to verify this, so many there would be to examine. This *Salvia* is still used as an eye-lotion.

Many others, as the name *Salvia* implies, were for centuries held in high repute as remedies for various ills. The "Sages of Virtue" were grown in monasteries and dispensed by the monks. The monkish saying "*Cur moriatur homo cui Salvia crescit in horto*" (why should a man die in whose garden *Salvia* grows?) is quoted by old writers, including Lawson (1618), one of the most delightful "classics" of garden literature.

Both Bacon and Evelyn extolled the *Salvias*. The latter (1699) included them in his list of sallets "yet so as not to domineer," and adds: "In short Sage is a plant endu'd with so many and wonderful properties as that the assiduous use of it is said to render men immortal."

Gerard (1597) in his beautiful Elizabethan English, praises the *Salvias* warmly as panaceas for many ills: "The leaves of Red Sage . . . holden very hot unto the side of those that are troubled with a grievous stitche, taketh away the paine presently."

Although I do not employ my herbs medicinally I take great delight in looking up the many virtues which our forefathers claimed for them. In England there are *Salvia* and *Fuchsia* societies. Such societies, sponsored and encouraged by bird-lovers, together with an attempt to "bell the cat," should do much to restore lost song to many suburban gardens. A list of plants favoured by native birds should be helpful. Silvereyes come in flocks to the viscid fruits of the Sweet Pittosporum. Many people refuse to grow marigolds and zinnias because of bird depredations.

I have seen no prettier picture than three or four goldfinches on a head of Tansy (*Dipsacus sylvestris*). It is a handsome, alien weed and, doubtless, would need a watchful eye on it. I have now planted Fuller's Teasel (*D. fullonum*). Between them they should lure many a "charm" of goldfinches to the garden.

Several *Banksias* and *Grevilleas*, as well as many *Ericas*, are splendid lures. *Grevillea robusta* and many *Eucalypts* provide banquets for a wide range of nectar-sippers, but these are too robust for the average garden.

A list from the various Botanic Gardens should be useful.

PLATE VI



Glory Sage: *S. dichroa*. Small portions of yard-long inflorescences. Note the forked stigmas and the pouched lower lip. This species sets few seeds although freely visited by bee and bird.



Midnight Salvia or Black-flowered Sage (*S. discolor*). Note the viscid secretion on the flower stems. The centre leaf-stem is covered with white pubescence but is not viscid.

SOME NOTES ON THE GERMINATION OF MALLEE EUCALYPTS

By W. J. ZIMMER, Dip.For., F.L.S., Wangaratta, Victoria

The following notes are offered in support of the evidence of Dr. C. S. Sutton on the above subject which appeared in the May issue of the *Victorian Naturalist* under a contribution by Mr. Edward E. Pescott, of Melbourne.

During the past thirteen years, I have been particularly interested in the Eucalypts of the Mallee. I have no illusions regarding the mode of propagation employed by these species. Numerous experiments have indicated beyond all doubt that the seeds of the Mallee Eucalypts are very fertile—they also possess the ability to germinate freely.

Further, observations made throughout a series of root-studies on *Eucalyptus incrassata* and *Euc. oleosa*, in the early seedling stages of natural regeneration on the sandhills near Mildura, have shown that the roots of seedling plants are definitely disconnected from anything that could give rise to the assertion that the plants come from old underground roots.

At the Forests Commission Tree Nursery, Merbein, thousands of seedlings of the following Mallee Eucalypts have been raised from seeds personally collected in the locality: *Eucalyptus incrassata*, *E. angulosa*, *E. dumosa*, *E. gracilis*, *E. oleosa*, and *E. viridis*. These sowings were always entirely successful, the proof of which shows the high fertility of the seeds and refutes the fallacy that the seeds of Mallee Eucalypts are not germinable. Further, the subsequent transfer of seedlings from the seed-boxes to pots for further development was always attended with success. Some of these small trees are now growing at the quarters of the Forests Commission, 11th Street, Mildura, where they are at least eleven feet high. Others were sent to the Waite Research Institute, South Australia, for planting in the arboretum there.

Last year, experiments were conducted to ascertain the effect of intermittent supplies of moisture on the seeds of various Mallee Eucalypts—namely: *E. oleosa*, *E. rostrata* and *E. bicolor*. On application of moisture for periods up to five days, after which the seeds were withdrawn from the treatment and allowed to dry out thoroughly before re-sowing, the data collected showed that in

- (a) *E. oleosa* (Red Mallee) fertility-value of the seeds was not appreciably altered
- (b) *E. rostrata* (Red Gum) the effect of moisture for periods of one, two and three days was negligible, but that for periods of four and five days the fertility-value was reduced by about 80%.

- (c) *E. bicolor* (Black Box) the effect of moisture for periods of one, two and three days did not alter the fertility-value of the seeds, but that for periods of four days and five days the fertility-value was reduced by approximately 20% for four days and 60% for five days.

The greater loss of fertility-value exhibited by the seeds of Red Gum for the five-day period is due to the fact that, although the resistant qualities of the testa retard the process of water imbibition in the early stages, the absorption of water proceeds with greater rapidity in the later stages.

In this connection, it is interesting to note that the seeds of Black Box will not remain floating on water for anything like the time that will the seeds of Red Gum. The advantage of distribution thus afforded the Red Gum is obvious. This resistance to the absorption by the testa of the seeds of Red Gum is due to the presence of an undetermined substance which imparts an amber coloration to water. The impeding agency slows up the early passage of moisture through the testa.

That this is the case is supported by the fact that (in conjunction with other data) after eight days of complete immersion in water, fertile seeds of Black Box recorded a percentage germination amounting to 90%, while, on the other hand, fertile seeds of Red Gum gave only 50%. Further, it was observed that after two days' immersion, it took five days longer for the seeds of Black Box to germinate than it did the seeds of Red Gum—that, after three and four days' immersion, it took the seeds of Black Box three days longer than the Red Gum to germinate—and that, after five days' immersion, the order of germination was reversed, i.e., the seeds of Red Gum germinated two days before those of Black Box.

Thus, as far as Red Gum is concerned, it seems that, after the retarding influence on moisture penetration exercised by the impregnated testa is lessened, the absorption of water becomes more rapid, and the rate of germination is accelerated.

Unfortunately, on account of transfer these experiments were never completed, so the information gathered cannot be regarded as conclusive. The results, however, give sufficient indication of the interesting research work that awaits investigation in this sphere.

A BOUNTIFUL SEASON

Good rains in July have made it apparent that the coming Spring in many parts of Victoria will be very bountiful, both in regard to flowering plants and nesting birds.

Mr. F. Chapman reports that at present there is a splendid show of flowering Grevilleas in the Maranoa Gardens, Balwyn, and, among other plants, large numbers of Wattles are "straining upon the start," ready to give the finest display of blossom seen for many years.

PAYING HOMAGE TO THE LYRE-BIRD

Mr. Tatsuo Kawai, Japanese Minister, was given a novel reception on Sunday, July 20—the most joyous and entertaining greeting he has experienced in Australia, or perhaps anywhere else. He was “received” by the lyre-birds of Sherbrooke Forest.

Because of his interest in birds, Mr. Kawai responded readily to the invitation of Melbourne naturalists to visit Sherbrooke, and took with him Mr. Norizane Ikeda (cultural attache), Miss Tamaye Tsutsumida (private secretary), and Mr. T. Kurozumi (representative of the *Asahi Shinbun*).

It was not the lyre-birds that opened the programme for the visitors. The initial choristers were kookaburras, a pair of which, perched in a towering mountain ash on the edge of the forest, gave an indication of what they could do if they really tried.

The “laughter” of kookaburras is quite familiar to Australians. Heard by others for the first time it seems very extraordinary. Miss Tsutsumida looked at the birds in amazement. “My,” she said, “if I heard that noise at night I think I would scream!”

The same “noise” was heard again soon afterwards, but in more dulcet form, as rendered in a series of beautiful bubbling notes in the song of the lyre-bird.

A fine male lyre-bird had been discovered feeding quietly as he scratched in the soft earth, and every now and then he paused in his labours and sang. The majestic tail was at rest during the feeding process, but after a time the bird went to a log and sang; and then he emitted the curious whirring noise that is a prelude to display, and, elevating and spreading the tail, he sang and danced on the old log to the time of his own music.

The visitors were delighted. They could not identify all the birds which the mocker imitated, but there could be no mistaking the power and the glory of the melody itself, and as the graceful bird jumped up and down in rhythm with its calls one of the Japanese found himself jumping up and down in sympathy.

Later, the visitors had an opportunity of seeing the special dancing-mounds of the lyre-birds, as well as a nest with an egg, and between whiles they admired the lofty gum-trees, the ferns and other striking vegetation of Sherbrooke Forest.

“There is no bird in Japan,” Mr. Kawai said, “to rival the lyre-bird in strength of melody. But we have there some sweet singers, especially one called the *uguisu*, a kind of robin, or bush-warbler, which has a very pleasing song.”

“Yes,” Mr. Kurozumi said, “it calls like this. . . .” And he whistled in a curious cadence, partly spirited, partly plaintive.

Just previously, our lyre-bird genius had been imitating a call of the English blackbird, so that, with the addition of the Japanese journalist’s whistle, we had the notes of birds of three continents rendered in Sherbrooke Forest.

During the afternoon, a visit was paid to the Badger Creek Sanctuary, where the Minister was enabled by the Director (Mr. D. Fleay) to see at close range many other distinctive Australians, among them the koala, cuscus, tree-kangaroo, possum-glider, and a male emu devotedly sprawled upon 11 eggs.

A white cockatoo which invited the visitors to “scratch Cocky” reminded Mr. Kawai that he once owned one of these birds and taught it to speak a few words of Japanese. Also, he mentioned that a friend of his obtained in Peru a parrot that could speak scraps of Spanish and afterwards learned fragments of Japanese.

And that, in turn, reminded me of an Australian cockatoo in the Berlin

zoo that muttered German phrases. It becomes apparent that cockatoos and parrots are the real internationalists!

But the point to be marked is that captive birds are taught their imitations. How much more skilled is the lyre-bird, which not only makes its own borrowings, from the voices of its native forests, but weaves them all into a glorious symphony, and, from time to time dances to the tune of its own melody.

A. H. CHISHOLM.

"ANTING" BY RUFOUS WHISTLERS

On April 21, 1941, I saw a pair of Rufous Whistlers "anting" themselves. The ants in question were red mound ants (*Iridomyrmex detectus*). The two Whistlers had perches a few yards away from the mound and near one of the "ant-roads"; from these low bushes they flew to the road, grasped an ant and flew back to the perch. Here the head was shaken from side to side a few times, after which the ant was dropped, and the birds went through actions similar to preening, but directed their attentions almost entirely to breast feathers. They were so engrossed that I was able to approach to within ten yards of them, and watch from behind a tree for over twenty minutes. Glasses made it easy to be certain of the birds' actions, and to see them draw a feather through their beaks. It was amusing at times to see the hastiness with which the bird removed an ant which took a grip of the bird's foot or leg as it stood in the "road" for a moment, apparently choosing a suitable insect. On every occasion the birds returned to the same perch.

After twenty minutes I approached the spot (I couldn't wait any longer) whereupon the birds flew. I searched the ground under their perches, where a few disabled ants were to be found. They were all crushed about the thorax, but possibly that was only because that was the central portion and the part that came naturally as offering the most certain grip. None of the ants was dead.

On a previous occasion I saw a male Whistler standing alongside one of these "ant-roads" and after watching for a time concluded that it was actually eating the insects; now I cannot be so certain of it although I was convinced at the time.

These birds are not all migrants here—at least some are to be seen throughout the year (perhaps they are actually migrants from another district) but they do not sing during the winter months. I have never heard a whistler song or call-note in May, June or July, but they appear to commence again towards the end of August.

P. A. BOURKE, Gilgandra (N.S.W.).

"HERE, DICK! HERE, DICK!"

Some remarks were made recently about Mud-larks being seen every day in the heart of the city of Melbourne, and I thought the writer would like to know that he is not the only one who watches birds of this species through a window when he (or she) should be doing his (or her) work.

Nearly every day I see a pair of these fussy and noisy birds fighting their reflections in the wind-screen of our Principal's car near the MacRobertson Girls' High School, and I am always amused to see how excited they become when their vigorous attacks have no effect on the "other" birds. On the window ledge (about nine inches wide) we see them, too, dancing daintily to and fro, again at their reflections, and shrieking at the top of their voices, "Here, Dick! Here, Dick!" All this is very cheering in the midst of a dull lesson.

NITA MACINTYRE.

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EXCURSIONS

SATURDAY, AUGUST 9.—National Museum. Subject: Australian Mammals. Leader: Mr. C. W. Brazenor. This excursion will be held in the evening, not in the afternoon as previously announced. Mr. Brazenor will show several moving pictures dealing with Australian Mammals in general and one showing the preparation of the various dioramas in the Museum. Meet at the main Russell Street entrance at 7.45 p.m.

SATURDAY, AUGUST 30.—Maranoa Gardens. Subject: Australian Native Plants. Leader: Mr. F. Chapman. Meet at the Gardens at 2.45 p.m. Travel by Mont Albert tram from Collins Street and alight at Kireep Road.

SATURDAY, SEPTEMBER 6.—Wattle Park. Subject: Birds and Wattles. Leaders: Messrs. A. S. Chalk and Ivo C. Hammet. Travel by Wattle Park tram from Batman Avenue and alight at Boundary Road. Meet at the Boundary Road entrance at 3 p.m.

SATURDAY, SEPTEMBER 13.—Burnley Gardens. Subject: Grasses. Leader: Mr. P. F. Morris. Meet at the entrance gates at 2.45 p.m. Wattle Park and Burwood trams from Batman Avenue pass the gates, and the terminus of the Hawthorn tram (from Flinders Street) is only about 200 yards from the gates.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 1/-.

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HUDSON: *Dead Man's Plack and an Old Thorn*, first edition, 1920, 12/6.

HUDSON: *Idle Days in Patagonia*, first edition, 1893, £3/3/-.

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REEVE: *Elements of Conchology*, 1860, £2/10/-, 2 vols.

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SEPTEMBER, 1941



THE Victorian Naturalist

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Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, SEPTEMBER 8, 1941

1. Minutes.

2. Apologies.

3. Subject for the evening:

"Plant Growth in Malaya."
Illustrated Lecture by
Mr. R. E. Holttum, M.A.,
Director of the Botanic Gardens, Singapore.

4. Discussion of Official Floral Emblem for Victoria.

5. Election of Members:

AS COUNTRY MEMBER	PROPOSER	SECONDER
Miss Ruth Clark, The Rectory, Toora.	Mr. A. J. Tadgell.	Mr. G. T. Stewart.

AS ORDINARY MEMBER		
Mr. G. Price, 35 Gardenia Road, Gardenvale, S.4.	Mr. H. T. Reeves.	Mr. Ivo C. Hammet

6. Nomination of Members.

7. Correspondence.

8. Reports of Excursions.

9. General Business:

Forthcoming Excursions.
Questions by Members.
Remarks by Exhibitors.
Nature Notes.

10. Conversazione.

The Victorian Naturalist

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No. 693

PROCEEDINGS

The monthly meeting of the Club was held on Monday, August 11, at 8 p.m. The President, Mr. P. Crosbie Morrison, presided over about 100 members of this and kindred societies.

NATURAL HISTORY MEDALLION

The President, in extending a welcome to the Chief Justice, Sir Frederick Mann, who had kindly consented to present the medallion to this year's winner, Mr. F. Chapman, gave a brief outline of the history of the medallion and why it is awarded each year.

Sir Frederick Mann, in making the presentation, said that Mr. Chapman well deserved the award as a distinguished citizen of Victoria. In addition to his scientific attainments Mr. Chapman had done much to help young and inexperienced members of the various societies to which he belonged. His work was well known outside the boundaries of Victoria. Sir Frederick also praised Mr. Chapman's work in arranging the palaeontological collection in the Museum, and as Commonwealth Palaeontologist. This scholarship, it was suggested, made Mr. Chapman a contemporary of ages past, present and to come.

Mr. Chapman, in reply, described his young days as an enthusiast copying the names of plants in the Kew Gardens, London, under the encouragement of his elder brother. He then became an amateur entomologist, confining himself to the collection of butterflies and moths. He found that the more one learned of one science the more one found it useful in the study of other sciences.

Mr. A. D. Hardy, President of the Microscopical Society, in congratulating Mr. Chapman, remarked that when Mr. Chapman arrived in Melbourne he (Mr. Hardy), had received a letter from London expressing great regret that Mr. Chapman had left, and suggesting that Victoria would be much enriched by his presence.

Mr. Chapman then delivered his address on "A Geologist's Ramble in an Australian Garden," a summary of which appears elsewhere in this issue.

The President thanked Mr. Chapman for his address and Sir Frederick Mann for attending to make the presentation.

ELECTION OF MEMBERS

The following were duly elected members: As Ordinary Members: Miss Jean Petty and Mr. J. Mollison.

DEC 18 1941

ANNUAL SHOW

The President announced that this would take place on October 6 on lines similar to those of last year, and asked for the assistance of the members generally.

GENERAL BUSINESS

It was decided that a letter of thanks be sent to the Premier for his action in preventing slaughter of seals in Westernport Bay.

Mr. A. H. Chisholm referred to the fact that August 15 was the Centenary of the death of Mrs. John Gould, and paid a warm tribute to her as the "mother" of Australian bird-study.

Mr. R. G. Painter mentioned having heard a pallid cuckoo at Box Hill on an unusually early date, July 31.

Mr. F. S. Colliver asked if there was any information, in view of the fact that the lyre-bird laid only one egg to a clutch, whether the sexes were more or less evenly balanced. Mr. Chisholm replied that while there was no definite data on the point, we could well have faith in Mother Nature in such delicate matters. He added that in recent years, since the hunting of lyre-birds for their tails was abandoned, and since the public in general had become more "lyre-bird-minded," the species had been holding its own and probably increasing slightly.

Mr. J. H. Willis and Mr. V. H. Miller mentioned having seen English thrushes in Melbourne singing on the ground. Mr. Chisholm said that this was somewhat unusual, but had been recorded both for the thrush and its cousin the blackbird.

Mr. D. C. Geddes, on leave from the Middle East, said that the sight of a eucalyptus tree at Tobruk had reminded him of home.

Mr. Ivo C. Hammet mentioned that *Acacia sophorae* was being used as a sand-binder in Libya.

EXHIBITS

Mr. Chas. French.—Four species of tea-tree in flower, viz., *Leptospermum scoparium*, var. *Walkeri*, var. *Sandersi*, var. *alba* (with double flowers), var. *Keatleyi*, all garden-grown at Canterbury. At the July meeting Mr. French had exhibited specimens of variegated foliage of *Eucalyptus obliqua*, *Goodenia ovata*, and *Acacia myrtifolia*.

Mr. C. J. Gabriel.—Sinistral shells of *Busycon carica*, Gmel, from Florida, and *Calliostoma incertum*, Reeve, from Westernport, Vic.

Mr. P. Crosbie Morrison.—*Archaeocyathinae*, a Cambrian fossil from Ajax deposits, Flinders Range, South Australia.

Mr. S. R. Mitchell.—Opalized shells and wood from Mount Stewart and White Cliffs.

VICTORIA'S FLORAL EMBLEM

By JAMES H. WILLIS, National Herbarium, Melbourne

Brief reference was made in the *Victorian Naturalist* for August to the movement for selecting a native flower which, by popular consent, could be adopted as the State floral emblem and receive permanent official status. Such an accomplishment would doubtless impress our sister States and incline them to have their own respective national flowers also gazetted—a comparatively easy matter in view of the unanimity of choice already prevailing.

It is surely a reproach to us, that after ninety years' colonial existence we have made no attempt to choose, from the rich inheritance of native blossoms, some bright, commanding subject as the embodiment of our national life and sentiment; but this want is at last to be appeased and our F.N.C.V. Committee has wisely invited a discussion of the question at the September meeting, when members will have an opportunity to champion their favourite flowers before a vote is taken on the most appropriate one for a national emblem.

By way of guidance to those who purpose taking part in this important discussion, I venture to suggest five requirements which one's choice of a suitable State flower should aim to fulfil. It should be:

1. A well-known, widespread native plant.
2. Of bold, strong outline, and so lend itself to decoration and conventional design as to be easily recognized, even when not in colour.
3. Of bright, pure colour, contrasting agreeably with the colours of other floral emblems which may be associated with it in heraldry.
4. Of easy cultivation.
5. Abundant and in bloom on one or more of the national holidays.

There may, of course, be many other desirable features in a State emblem (and we hope that the various protagonists will emphasize them), but the foregoing requisites can not be denied. It is well-nigh impossible to find a plant which answers every point in detail, yet one must envy the people of New South Wales in their possession of the waratah—tall, stiff, regal, bold of contour, rich of hue, adaptable to every conceivable design, recognizable at a glance, renowned the world over and typifying a race of flowering plants as ancient as any land surface on our vast continent—fossils of the *Protea* family take us back to far Cretaceous times, a lineage of some hundred million years!

Ten years ago, the Victorian Treeplanters' Association held a plebiscite on popular wildflowers, at which no fewer than 41,256

votes were cast, the allotments being: *Fairy Wax-flower*, 11,142; *Scarlet Bottle-brush*, 11,037; *Common Heath*, 10,133; *Red Correa*, 3,533; *Purple Coral-pea*, 1,403; with several other shrubs of fewer than 1,000 votes each.

In 1931 also, the Melbourne *Herald* conducted a similar plebiscite, which gave first, second, and third place to *Scarlet Bottle-brush*, *Red Correa* and *Fairy Wax-flower* respectively. I propose to take each of these five plants in turn, together with *Golden Wattle*, *Blue Pincushion* and *Pink-eye* (eligible candidates which were unaccountably left out of the above campaigns) and very briefly sketch their principal advantages and limitations as national flowers elect.

1. FAIRY WAX-FLOWER (*Eriostemon obovalis*)

At home throughout eastern Australia and Tasmania (excepting Queensland), though restricted in Victoria to box or ironbark forest (as on the western goldfields). First collected by Cunningham in the Blue Mountains (N.S.W., 1823). Most popular and exceedingly beautiful, with fragrant grey-green leaves, roseate buds, and wide-open, starry flowers of wax-white or palest pink. It belongs to the lemon family (well developed in our continent) but is seldom cultivated. Unfortunately, the little flowers and leaves are not very distinctive and would tend to be lost in an uncoloured conventional design.

2. CRIMSON BOTTLE-BRUSH (*Callistemon citrinus*)

It was the "Scarlet Bottle-brush" which polled so high in the Treeplanters' and *Herald* plebiscites, but I feel this must surely be a misconception on the part of the voters—a confusion of "scarlet" with the true "crimson" of our *Census*, which is an incomparably superior plant to, with larger leaves and more showy flowers than, the "scarlet" (*C. rugulosus*); both are members of the myrtle and eucalypt family, so conspicuous all over Australia. *Callistemon citrinus* is hardy, extensively cultivated and of undoubted beauty and simplicity of form, but, although distributed throughout eastern Australia, its occurrence in our State must be regarded as rare, a position not likely to improve with the prospect of land settlement and further bush-fires. The colour scheme, being "red and green," is precisely the same as that obtaining in the emblems of three other States, viz., N.S.W., S.A., and W.A. with waratah, Sturt Desert Pea, and Kangaroo Paw respectively; thus the selection of Bottle-brush would not make for variety and contrast in a federal coat-of-arms.

3. COMMON HEATH (*Epacris impressa*)

The well-known heath has a wide distribution in coastal east Australia (excepting Queensland) and was first described from Tasmania by Labillardiere (1804). It is available in four distinct

colours (white, pink, crimson and brick-red), is abundant for several months of the year, including the Easter and King's Birthday vacations, and enjoys great popularity although not often cultivated. The Botany School, Melbourne University, favours this flower above all others as a desirable emblem. It typifies the large, pre-eminently Australian family *Epacridaceae*, and the only thing I can criticize at all is the rather small, crowded detail which may militate against its recognition when conventionalized.

4. RED CORREA (*Correa rubra*)

This came second in the *Herald* plebiscite, and I am informed by Riley's wildflower shop in Queen's Walk that the Melbourne public demand more fancy-work and novelties involving a Correa design than any other floral motif. It is already the badge of our F.N.C.V. and, with large simple flowers lending warmth to the June days about King's Birthday, would admirably satisfy emblematic requirements; Correa is also a member of the lemon family, but appears seldom in private gardens. Here again the prevailing "red and green" colour-schemes already selected by N.S.W., S.A. and W.A.

5. PURPLE CORAL-PEA (*Hardenbergia monophylla*)

The bold leaves, richly hued trusses of bloom in early spring, ready cultivability and common occurrence (all States except W.A.) of our so-called "sarsaparilla" creeper earn for it a high place among candidates for the national flower; but would the tiny flowers be distinct enough in a design without colour?

6. GOLDEN WATTLE (*Acacia pycnantha*)

Symbolizing the gold of our wheat-fields, citrus groves and mines, and the sunshine of our skies, this well-known, popular shrub is common in Victoria, S.A. and N.S.W., whence it was first described (1842). It is a favourite subject in parks and avenues and has already achieved signal fame as the national flower of the Commonwealth—sprigs of it adorn each side of the coat-of-arms in our new florin pieces. The chief objection to wattles in general as emblems is the fact that they are by no means indicative of Australia, for Africa has more than 100 different kinds, while Asia and America also claim a goodly number.

7. BLUE PINCUSHION (*Brunonia australis*)

No plant is more distinctively Australian than this—single species in a solitary genus in a family that is found in every sector of our great continent (the dry Centre included) but nowhere beyond it. The name *Brunonia* is the Latin form of the name of Robert Brown, "father" of Australian botany, who obtained the first specimen of this charming summer flower from Arthur's Seat, January,

1804 (the only part of Victoria in which he collected). Pin-cushions are in bloom from before Christmas to as late as the Foundation Day holiday—a period when few other plants are a-flower. The bright cerulean heads and silvery foliage would form a pleasing contrast with the reds and greens of other State flowers, and might symbolize blue skies and shining sea. The bold outline of flower-heads towering strongly above broad leaves would facilitate conventional design, though it is possible that Blue Pin-cushion may appear too like a *Scabiosa* or a *Thrift* if uncoloured. Country folk are well acquainted with it, but it is unfamiliar in the cities and is scarcely if ever grown in gardens—there are unexploited possibilities here for a novel border plant.

8. PINK-EYE (*Tetralthea ciliata*)

This dwarf shrub also belongs to a peculiarly Australian family and trails its magenta, mauve or white flower-bells throughout most of the State, as well as in S.A. and Tasmania. The four-petalled blooms and ternate leaves would make for easy designing, but are rather small and indistinctive for uncoloured applications. Pink-eye is not universally known and seems to resent horticultural practices.

HELP THE HEALESVILLE SANCTUARY

Because of the check upon patronage caused by petrol rationing, trustees of the Native Fauna Sanctuary at Healesville fear financial difficulties in keeping the good work maintained. One suggestion for easing the situation, made by Mr. K. Byron Moore (trustee), is that friends of the Sanctuary be asked to assist by "adopting" a bird or a mammal until better times arrive. He thinks that if a fair number of well-wishers could be induced to subscribe 2/- a month (3d. a week) in this manner, much good would result.

Possibly some members of the Field Naturalists' Club would care to assist in the "adoption" project. If so they should get in touch with the Secretary (Mr. J. Hansen, Healesville), or the Director (Mr. D. Fleay).

PERSONAL NOTES

Mr. Gregory Mathews, who is now living in Sydney, has been elected President of the Royal Zoological Society of N.S.W., with Mr. A. F. Basset Hull as hon. secretary.

Mr. A. S. Chalk, a past-President of the F.N.C., has been elected Treasurer of the Royal Australasian Ornithologists' Union, in succession to Mr. C. L. Lang, resigned. Members of the F.N.C. will congratulate the R.A.O.U. on the acquisition of Mr. Chalk as Treasurer.

Mr. J. S. P. Ramsay, of Sydney, is the incoming President of the R.A.O.U. He is a son of the late Dr. E. P. Ramsay, the distinguished Australian ornithologist of last century, who was a friend and correspondent of John Gould.

NORTHWARD

By BLANCHE E. MILLER, Melbourne

Now that petrol restrictions have curtailed long excursions into the country, any opportunity to escape from the immediate environs of the metropolis is doubly welcome. East or West, it matters not, but when the destination is North, and Spring just round the corner, so to speak, there is the pleasurable anticipation of making the acquaintance of species of birds as yet unfamiliar. Not that we have lost interest in those better known to us. Heartily do we endorse the sentiments of an astute observer that a new slant on an old bird is almost as thrilling as meeting a new bird for the first time.

So, early in August, with the prospect of fair weather, and the comforting thought that our trip was not unassociated with "the service of the King," we set out for Echuca. What milestones there were to count—not the milestones of the C.R.B., but memories of little incidents! There, at that forest pool, we regularly saw a Little Pied Cormorant—an optimist we thought him until one day we saw a super-optimist at the same spot, equipped with rod and reel!

There, beside the road, a white Egret stayed all day, as oblivious of the traffic as the majority of the travellers were of its stately beauty. Choughs we looked for at yet another place along the highway, and, nearing Ravenswood, loitered a little while the pert crested Bell-bird ate a tit-bit on the road. The wheat-fields on the plains are linked in memory with the softly-coloured Galahs. Less impetuous in flight than the parrots, they display a grace undreamed of in their caged and captive brethren.

The camping area at Echuca is a proclaimed sanctuary. Almost completely surrounded by the River Murray, and devoid of unnecessary "improvements," it is an ideal place for bird-observing. Even the small formal garden at the entrance to the park is an attraction for the native birds. Crested Pigeons are a decorative feature on the lawns, and the Grevilleas have a large population of small fry. Many of the commoner birds could be listed without the exertion of walking beyond the cultivated plots.

Quite a number of water-birds were on the river, but they were rather too apprehensive at the clapping of hands. The little Doo-doo Pigeon, or Peaceful Dove as it is called, was calmly feeding along the banks, where also was the Black-fronted Dotterel, the country cousin of the seashore species. Pied Currawongs playing on the ground were an interesting and unusual sight; their method of drinking was distinctly akin to the leisured ways of domestic fowls. White-browed Babblers betrayed their presence by their insistence that I should "Go-away;" and the terrestrial feeding habits of the Brown Tree-creeper somewhat belied their common

name. To Jacky Winter (the Brown Flycatcher) must be given the credit of turning disadvantages to good account. Not anywhere in the Park was one individual to be found, but numbers had crossed the fence into the Sports Ground. In the midst of the commotion and noise of preparations for the incoming troops, Jacky and his friends were the least disturbed, and held high revelry.

Towards one side of the Park there is a fine plantation of Murray pines, and just beyond are eucalypts and scrubby undergrowth bordering the River—a veritable paradise for birds. Here it was, late one afternoon, that the sun gleamed on a “new” colour, which meant, for me, a “new” bird! Fortunately I was in a good position for observing, with the sun behind me, when two birds frolicked in and out of the leaves of a slim sapling, displaying an upper base of tail that belonged neither to a Firetail nor a Fantail, but something that was a blend of the two. Then, in the provocative way of birds, they were gone, but not before it was possible to form some idea of the shape and size. By a process of elimination the “new” bird was tentatively called the Chestnut-tailed Thornbill, a guess that proved to be correct.

Desiring to verify my observation, a further visit was paid next morning to the same spot. But what a transformation the locality had undergone, overnight! Yesterday, the dominating notes were of Scarlet Robins, and Grey Fantails, and Chick-a-wees; but seemingly a wand had been waved. The pines were loud with the trills of numbers of Rufous Whistlers and the “purring” of Pardalotes, and the call of Cuckoos proclaimed that the nesting of birds was imminent, if not already an established fact. There was little trouble in locating the Thornbills for they seemed to be well aware of their attractiveness, and sought the sunlight in the saplings. No furtive “tiz-tiz” in the undergrowth marked their lurking-place, but a clear, pleasing note, as they foraged over the foliage, or flew from spot to spot, displaying the clear, almost white undersurface of their shapely little bodies, or the glorious sheen of the upper base of their dark tails. Almost one could have rhapsodized about their beauty!

And now there flew into view a number of White-backed Swallows. Certainly, *they* were not in the Park the day before. As they flew, they called to one another, and I cudgelled my brains for the associations of that call. In flight these Swallows seem to be the link between the Welcome Swallow and the Wood Swallows, but the call is more reminiscent of the Swifts. They nest in a tunnel in a sand-bank, and it is to be hoped that they did not decide on the banks of the sand-pit over which they were flying, else disaster would surely overcome their efforts. The identification of birds would be very simple if all were as distinctively marked as these Swallows.

Time was far too short for a thorough investigation of the bird-life of the Park, which, being accessible by rail, would be worth considering for a Club excursion. One distressing feature was the attempt to improve on something that required no such improvement. In an enclosure were two dejected-looking Black Swans with both wings cut, and a poor specimen of a Wallaby. Swans a-plenty were to be seen on the River, and far, far better would it be to turn the Wallaby out than to exhibit the little marsupial under such circumstances, when we pride ourselves on our sense of fair play.

AN EARLY VICTORIAN BIRD LIST

One of the soundest and most finely produced of the early natural history publications of Australia is the *Tasmanian Journal of Natural Science*, which was printed in the 1840's. Sets of this journal are now rare. Reading through Volume 3 recently—it was lent me by Mr. Clive Turnbull, of Melbourne—I came upon a wealth of interesting material, including what is probably the first local list of birds ever compiled in Victoria.

The paper is entitled "A List of Birds which frequent the upper portion of the River Goulburn, in the district of Port Phillip, New South Wales," and the author is John Cotton, C.M.Z.S. The list is dated March 1848.

Although the author presents the List only as "an approximation to a complete catalogue," it contains 140 species. Most of the birds mentioned are still more or less abundant, but others are now rare or have vanished from the Goulburn country.

The species recorded include: White-breasted and Peregrine Falcons, White Goshawk, Black-breasted Buzzard, Wedge-tailed Eagle, Bee-eater, Whip-bird, Lyre-bird, Satin Bower-bird, Green-leek Parrot, Blue Mountain Lorikeet, King Parrot, Blue-banded Parrot, Turquoise Parrot, Bustard, Emu, Native Companion, and, amongst aquatic birds, seven species of Ducks.

It would appear that the author's observations covered a considerable variety of country, since he would find the Lyre-bird, Whip-bird and Satin Bower-bird only in heavily wooded areas, such species as the Emu, Bustard, Blue-banded Parrot and Turquoise Parrot (all rare now in Victoria) only on plains, and various other species in open forests.

Not the least interesting feature of the list is its use of vernacular names of the period. When did the names "Lyre-bird" and "Whip-bird" come into vogue? Cotton terms the one "Lyre-tail Pheasant" and the other "Crested Scrub-bird." "Lyre-bird," however, was quoted by Dr. G. Bennett as a "colonists' name" for *Menura* as early as 1834.

Here are some of the other names used by Cotton, the names in use to-day being given in parentheses: Hermit Kingfisher (Sacred Kingfisher); Cobbler's Awl (Spinebill); Saw Setter (Crescent Honeyeater); Jew Bird (Yellow-wing Honeyeater); Trumpeter (Friar-bird); Old Soldier (Noisy Miner or Soldier-bird); Yellow-eyed Nuthatch (Orange-winged Tree-runner); Reed Wren (Fantail-Warbler); Red-throated Robin (Flame-breast); Black-throated Robin (Scarlet-breast); Flutterer (Restless Flycatcher); Yellow-breasted Thrush (Yellow Robin); Black-crowned Thrush (Golden Whistler); Orange-breasted Thrush (Rufous Whistler); Longshank Pipit (Brown Song-lark); Superb Warbler (Blue Wren).

Among names used by Cotton and still in use to-day are: Tree-creeper, Emu-wren, Diamond-bird, White-winged Chough, Wood-swallow, Crested Shrike-tit, Butcher-bird, and Bell-bird (Bell-miner).

A. H. CHISHOLM.

A GEOLOGIST IN A NATIVE GARDEN

By FREDERICK CHAPMAN, A.L.S., Melbourne

(Summary of Address to the F.N.C. on August 11, when the author received the Australian History Medallion for 1940.)

The culture of Australian plants was early practised in the English nurseries of Chelsea and Fulham. In the latter part of the eighteenth and the beginning of the nineteenth century, the discoveries of the botanists who were attached to exploring parties under Cook and Flinders—men such as Banks, Solander and Robert Brown—were popular in the eyes of English gardeners. Novelties of plants and seeds from foreign lands, and especially from “New Holland,” were eagerly snapped up.

Of English gardeners referred to, one of the best known was William Curtis, who, after being a chemist’s assistant, turned to horticulture and established a most successful nursery at Lambeth Marsh. In 1787 Curtis started his world-famous *Botanical Magazine*, and not many years afterwards he was issuing coloured plates and descriptions of many Australian flowering plants. Curtis’s *Botanical Magazine*, of which I have the first sixteen volumes, dating from 1787, still runs on under various editors. It is a revelation to turn over these early coloured plates and to see the freshness of the hand-coloured engravings, after the lapse of 154 years.

Amongst the earliest collectors of our Australian plants, the names of Banks and Solander are connected with that of Captain Cook. Many years earlier—in 1699—the adventurous Englishman William Dampier collected specimens of plants from the west coast of Australia, and these are preserved in the Fitzwilliam Museum, Cambridge. In 1802 Robert Brown accompanied Flinders as botanist on the recommendation of Sir Joseph Banks. The results achieved by this young Edinburgh medical student were stated by Sir Joseph Hooker to be incomparably greater than that of any previous voyage.

Kew Gardens early recognized the importance of our Australian flora, and in 1814 Allan Cunningham was appointed as their official collector. He accompanied Oxley into the swamplands of the Lachlan and Macquarie Rivers. Thus in the early nineteenth century the Chelsea nurserymen were being supplied with seeds of a large part of the flora of this southern land. To cite, for example, one plant alone, *Humea elegans* is recorded as being introduced into England in 1800. It has there been grown as a highly ornamental biennial shrub, but possibly has to be sought for in English gardens.

Only a short while ago I had the pleasure of conducting the late Prof. Ernest Scott round our gardens at Balwyn. With what delight he, with Lady Scott, remarked the botanical history of our plants as recorded by the authorities on the labels, for amongst the

galaxy were Robert Brown, Allan Cunningham, Bentham, Sprengel, Linnaeus, De Candolle, Lindley and many others; most of these Sir Ernest had recently referred to in his Canberra address on "The History of Australian Science."

ROCKS AND SOILS

For the successful growing of Australian native plants an elementary knowledge of the geology of soils is eminently desirable. Native plants have strong likes and dislikes. As to the mechanical condition of the ground, they show a preference for either rocky, sandy or tenacious soil. In chemical composition this may be limy, acid, ferruginous or peaty. This selection of soil by the plants seems to have been operating with certain genera for long geological periods.

In spite, however, of such preferences of native plants for particular soils, we have shown that with the variations of soils available at the Maranoa Gardens, it is possible to grow at least 90% of the 500 species obtained from all States, including many from W.A., and these are in a generally healthy condition.

For many years past Professor W. W. Watts, of the Royal College of Science, London, has been an insistent advocate of elementary geology as an essential subject of study in schools, at home and abroad, and this I endorse. What untold pleasure it gives to people in every walk of life—the ability to interpret the wonderful secrets of the ground on which we tread.

PLANTS OF THE PAST

One of the pleasures that the geologist-cum-botanist may enjoy is that of projecting himself into the past. There are many stages where we may stop, look and listen. In the later Palaeozoic rocks of Wood's Point, near Walhalla, we find fossil plants little advanced from sea-weeds. At this far-off period we see the structure of the primitive land plants, with their foliage, bearing air-breathing cells, making stiffened stems tending to the erect structures, later to be recognized as club-mosses, ferns and fern-palms.

It is easier, however, to look back from the landscape of modern times—from the present forest and bush to the not-so-familiar vegetation of geological yesterdays. The plants that were growing in Australia only so recently, geologically, as a quarter of a million years, were similar to those of the present.

Even amongst the group of rocks we call the Tertiary, including the latest phases of earth history, we may expect to find startling changes in the past; those changes, however, were taking place so slowly that the trees, shrubs and general verdure seemed to creep over the changing landscape, fill the slowly moving gullies, and climb to further peaks and elevations without losing their specific or generic identity.

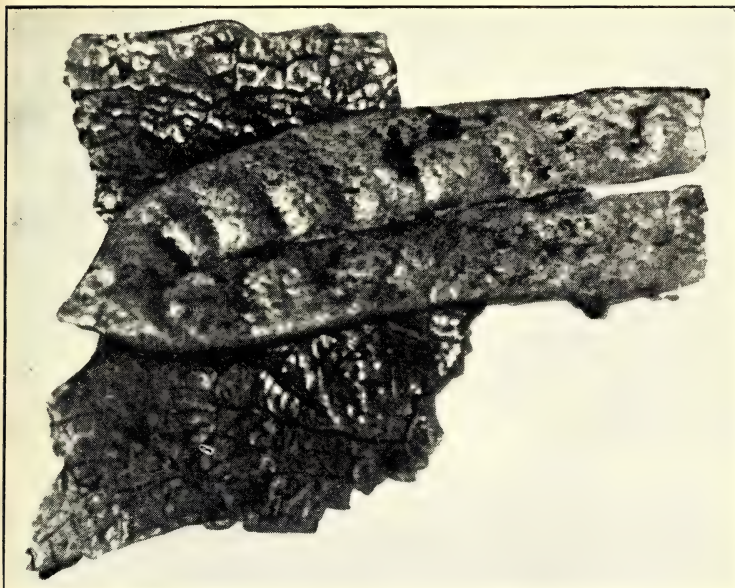
A bore was put down at Spencer Street, Melbourne, to test the foundations for a permanent bridge. At a depth of 66 feet a huge stump of a River Red Gum (*E. camaldulensis*) was struck. The river bank on which it occurred was high and dry in the Pleistocene—a mere 125,000 years ago. Its characters, of wood and leaf structure, had not changed one iota since that time.

A few years ago Sir Douglas Mawson investigated a bore for brown coal at Moorlands, in South Australia. The hole was carried for 100 feet and bottomed on lignite and pipe-clay. The episodes indicated by the successive strata are: First, an old land surface with invading estuarine conditions and river silts. This land debris contained numerous leaves of *Banksia* exactly identical with our coastal form of the present day, *B. marginata*; leaves close to Fraser's Australian Holly, (*Lomatia Fraseri*), now living in Victoria, New South Wales and Queensland; and the Australian Holly (*Lomatia ilicifolia*), of Victoria and New South Wales. Perhaps the greatest find of all was that of leaves of a Waratah, nearest to the New South Wales species (*Telopea speciosissima*). These were sent me for examination through the post. They arrived at the Melbourne Museum from Adelaide intact. Most were in the skeletonized state, as one finds them nowadays in a dry forest.

Above this land surface, at the Moorlands bore, comes 11 feet of a shallow marine limestone and black muds with sea shells. Then follows 20 feet of light and dark grey clays, still shallow marine. Then comes a deep-water phase, with 23 feet of polyzoal limestone of Middle Miocene age, gradually shallowing until marine conditions give place to oyster beds and deposits from freshwater springs. An almost identical species of that 11 million-year-old Oligocene Waratah is found in the Maranoa Gardens, and its first flowering was celebrated last year.

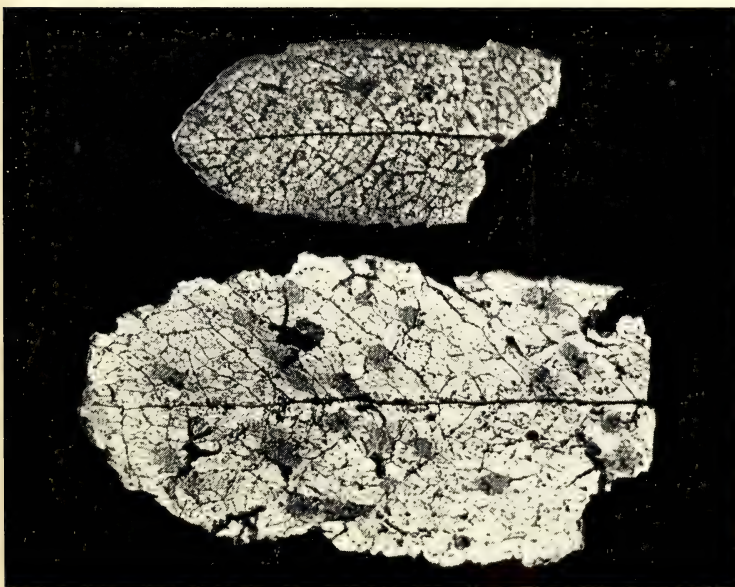
The frequent ups and downs of Mother Earth are never better shown than in the present positions of ancient fossil forests. The Dargo High Plains, now at 4,500 feet above sea-level, carry deposits of fossil forest leaves, eucalyptus and ferns, occurring in muds and silts, which points to decidedly less elevation when the trees were living: for the streams now flowing through the ranges are only about 2,500 feet above sea-level. This leaf-bed was laid down in Oligocene times, before the volcanic outburst of the Miocene older basalt. It is only one of a score of instances in Victoria, counterbalanced by great subsidence, below sea-level, as we see in the Yallourn beds of the Morwell district, where the continued harvest of cypress trees and mountain flotsam has filled up a gigantic sink to 800 feet below sea-level. Amongst the wonders brought to light at Yallourn is the fact that in Miocene times the Chinese Maidenhair Tree (*Ginkgo*) was firmly established in Victoria. It became extinct soon afterwards and is now to be found only in Chinese and Japanese Temple gardens.

PLATE VII



Carbonised leaf of *Banksia marginata* (Silver Banksia)
from the Oligocene brown coal bed.

Photos.: F. Chapman.



Skeletonised fossil leaves of the Waratah (*Telopea speciosissima*) almost identical with the Waratah living to-day. Found by Sir Douglas Mawson on ancient Oligocene land-surface beneath a deep-sea Miocene limestone (depth, 100-ft.) at Moorlands, S.A.

Another pleasant pastime for the geological gardener is to go round with a tomahawk and urge the present-day species to yield up their secrets of past epochs. In the work of rejuvenating old and tired trees in Maranoa Gardens, our skilful curator (Mr. R. Bury) often calls attention to changes of foliage thrown out by the amputated parts. The Sugar Gum, for example, in mature trees has elongate lanceolate leaves, but when heavily pruned sends out rounded ovate leaves; the veins are acute to the rib in the mature, and almost transverse to the midrib in the rejuvenated form. In a similar way we note the ancestral kind of foliage in the wattle, as for example in the blackwood when the tree is razed to the ground; that is, the early part of the new shoot is feathery-leaved, whilst the rest of the stem is flattened into phyllodes, a modification in which the plant is more suited to xerophytic or desert conditions.

Some of the foregoing remarks may appear rather startling to one who has not given serious attention to the teachings of geology. Not more than I was, however, when a remark was made by a newspaper columnist a year or so ago, about a species (not specimens) of a gum tree in the Maranoa Gardens having an antiquity of eleven million years. Thirty-five cars rolled up on the next Sunday to see the phenomenon, and some of the visitors were moved to remark that the tree did not look its age! "Anyway," they said, "how did Mr. Chapman know it?"

SHERBROOKE FOREST

Inquiries made in the Club's behalf concerning the encroachment of blackberries and of foxes in the Sherbrooke Forest area have brought an interesting reply from the Forests Commission. In a letter to the secretary of the Club, the secretary of the Forests Commission states that of the funds voted for forests work in the district, the largest amount possible is being devoted to keeping the blackberries under control.

The presence of foxes in Sherbrooke has also been given considerable attention, and it has been established that the foxes do not live in the forest, but have their lairs in more open country in the direction of Selby, from which they make regular visits to the Sherbrooke gully. They take a regular route, which has been noted, and a poisoning campaign is now in progress along the route, but outside the Sherbrooke area proper to avoid the possibility of poisoning any of the lyrebirds.

A PROMISING SEASON

Failure of autumn rains in Victoria caused naturalists, no less than agriculturists, to fear that the spring of 1941 would be very drab. Good falls during winter have changed the outlook, and it now appears that "the sweet o' the year" (which had its "official" beginning a few days ago) will be distinctly bountiful, both in respect of birds and flowers.

Many species of birds have nested earlier than usual. Among the "regular" early breeders whose nests have been noted are magpies, yellow robins, butcher-birds, yellow-winged honeyeaters, and several species of tits. More unusual records for August are nests of the scarlet robin, the shrike-tit, and the golden whistler, all of which were found near Melbourne last month.

CRIMSON-BERRIES SURVIVE ON THE CLIFFS AT WOOLAMAI

By JAMES H. WILLIS

Common in Tasmania and New Zealand where the Maoris know it as *Mingimingi*, the beautiful Crimson-berry (*Cyathodes acerosa*) is without question one of our rarest mainland heaths. Dried specimens at the National Herbarium are from Port Phillip in 1896 (precise locality not given, but presumably near the Heads), the eastern cliffs of Wilson's Promontory and neighbouring Doughboy Island, and Phillip Island at Cape Woolamai (where Baron von Mueller collected it in February, 1863).

A diligent search through volumes of the *Victorian Naturalist* reveals four Club excursions to the Woolamai area, viz., March, 1913, April, 1914, January, 1928, and January, 1929, but apparently in the outing of 1914 only did participants turn from the all-absorbing mutton-bird burrows to consider the botany of this fascinating granite headland. Of that occasion the late F. G. A. Barnard writes: "In the limited opportunities I had of investigating the flora during the recent three-day excursion, nothing of particular interest was noted." Obviously *Cyathodes* had evaded him!

On the 10th May last I was privileged to behold Woolamai's ruddy grandeur at close quarters for the first time, and, as I approached its automatic light, the thought persisted, "Can there still be a plant of Crimson-berry after the unrestricted grazing, the repeated scrub fires of mutton-birders, and all the vicissitudes of nearly 80 years since the Baron was here?" A hazardous scramble down scree, among crags of loose and weathered granite, 300 feet above boiling surf at the cliff base, and then—I could hardly believe my eyes—in a declivity just ahead, the vision of Crimson-berries as Mueller must have come upon them, all aglow with fruit: there were a dozen or more shrubs—gnarled, wind-flattened and hoary with age, yes, but alive and healthy! No young plants were observed, but so inaccessible are the old ones that they will probably endure for generations yet, safe from the depredations of man and beast.

Further exploration was rewarded by the location of a smaller colony, comprising three or four large bushes about a mile east from the light, and a photograph of them accompanies this note.

Cliff summits and their hinterland afford evidence of serious wind erosion, and it is only on the slopes of sheltered bays or the precipitous sides of narrow gorges that relics of the former tree-life are to be found: a veteran Coast banksia, occasional Coast tea-tree, sweet Bursaria, or thicket of cluster Pomoderris.

PLATE VIII



Crimson-berries *in situ* on coastal cliff, Cape Woolamai.

Photo.: H. T. Reeves.

FURTHER NOTES ON A NEPHILA

By EDITH COLEMAN, Blackburn, Victoria

The following notes relate to a large silver-grey *Nephila*, described in the *Victorian Naturalist* for August, 1940. With the earlier notes they form a complete life-history of an interesting species.

The spider was found at Ringwood 8/4/40, on guard in the centre of a large, golden snare. Greatly smaller males were in attendance.

The female made her "cradle" 23/4/40—a mere bed of flocculent golden silk. On this she deposited her eggs in a viscid fluid, and then covered them with more flocculent silk. In drying, the fluid appeared to contract, giving a honey-combed appearance to the mass. Later, it became somewhat powdery, leaving the pink eggs distinct and separate.

On August 15th there was no sign of hatching. On August 19th the eggs were crumbling apart, and a few spiderlings at the bottom of the mass were emerging. They appeared greyish in colour, but could not be seen clearly. As no attempt was made to leave the mass they were probably not ready for the first moult.

On December 12th the egg-mass was full of spiderlings with almost colourless, glasslike legs. The spherical, red abdomens of the females were like glistening jewels. The smaller, elongated abdomens of the males were reddish, but not nearly as bright as those of the females. As the "galleries" of the egg-mass were full of little, greyish, empty coats, it was evident that the first moult takes place within the egg-mass. In some species where the eggs are enclosed within a sac, skins are shed as the spiderlings emerge, or immediately afterwards. Hatching appears to take place over an extended period. Conditions were, of course, not normal.

Spiderlings were still emerging 7/2/41. They appeared to grow very quickly. On February 7th the abdomens of the little females were of the same bulky shape as those of the adult females; but the ruby colour had now become a milky grey. The males had almost lost their reddish colour, and were now drab little creatures. The egg-mass had been enclosed in a wooden box, the flocculent golden silk packed round with cotton wool. It was lightly sprayed from time to time to compensate for the absence of dew and rain.

It seemed strange that the spiderlings exercised only on the gold silk—rarely walking on the cotton wool. This suggests that the silk possesses some property which enables the spiderlings to move freely among the threads without entanglement. The silk was suspended on a bush in the garden. In ten days the spiderlings had all dispersed. So far I have seen no small, golden snares that should be evidence of survival.

LIST OF EXCURSIONS, 1941-1942

1941.	Place.	Subject.	Leader.
Sept. 6—	Wattle Park	Birds and Wattles	Mr. Ivo C. Hammet Mr. A. S. Chalk
„ 13—	Burnley Gardens	Grasses	Mr. P. F. Morris
„ 27—	North Balwyn	Birds and Violets	Mr. W. R. Maughan Mr. A. S. Chalk
Oct. 4/5—	Bendigo	General	Mr. Marc Cohn
„ 11—	Frankston	Orchids	Mr. Chas. French
„ 19—	Wonga Park	Bell-birds and wildflowers	Mr. Ivo C. Hammet
„ 25—	Croydon	Wildflowers	Mr. T. S. Hart, M.A., B.C.E.
Nov. 4a—	Rickett's Point	Club picnic	Mr. P. Crosbie Mor- rison, M.Sc.
„ 15—	Pound Bend	Birds and Native Flora	Mr. A. S. Chalk
„ 29—	Heathmont	Wildflowers	Mr. Noel Lothian
Dec. 13—	North Kew	Pond-life	Miss J. W. Raff, M.Sc.
1942.			
Jan. 3—	Fern Tree Gully	General	Mr. H. P. Dickins
„ ?—	Altona	Shore-life	Mr. and Mrs. J. J. Freame
Feb. 2b—	Belgrave	Ferns	Mr. A. J. Swaby
„ 14—	Domain	Eucalypts	Mr. C. H. Shewan
Mar. 16c—	Cowes, Phillip Is.	Koalas	Mr. G. N. Hyam
Ap. 3-6d—	Bright	General	Mr. H. C. E. Stewart
May 2—	Sherbrooke	Fungi	Mr. H. C. E. Stewart
„ 16—	Studley Park	Geology	Mr. A. C. Frostick
„ 30—	Botanic Gardens	Birds and Trees	Mr. H. C. E. Stewart
June 27—	National Museum	Ethnology	Mr. A. S. Kenyon
July 11—	Botany School	Botany	Prof. J. S. Turner, M.A., PH.D.
„ 25—	Geological Museum	Geology	Mr. G. A. Brown
Aug. 8—	National Museum	Palaeontology	Mr. F. S. Colliver
„ 22—	Clarinda Heathland	Late Winter Botany	Mr. F. H. Salau

Note.—a—Cup Day; b—Foundation Day; c—Labor Day; d—Easter.

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H. C. E. Stewart, J. H. Willis.

EXCURSIONS

SATURDAY, SEPTEMBER 13.—Burnley Gardens. Subject: Grasses.
Leader: Mr. P. F. Morris. Meet at the entrance gates at 2.45 p.m.
Burwood and Wattle Park trams from Batman Avenue pass the gates,
and the terminus of the Hawthorn tram from Flinders Street is only
about 200 yards away.

SATURDAY, SEPTEMBER 27.—North Balwyn. Subject: Birds and
Violets. Leaders: Messrs. W. R. Maughan and A. S. Chalk. Travel
by the Mont Albert tram from Collins Street at about 2 p.m. and
alight at the terminus. There is about a mile and a quarter walk to
the "Wild Life Reserve." Admission is 1/-, which is devoted to charity.

SATURDAY and SUNDAY, OCTOBER 4-5.—Bendigo. Subject: General.
A meeting is being arranged with local members and friends interested
in natural history, and short excursions to the neighbouring country
will be made. Details will be announced at the September meeting
and members who propose to attend are asked to hand in their names
then.

SATURDAY, OCTOBER 11.—Frankston. Subject: Orchids. Leader:
Mr. Chas. French. Train from Flinders Street at 1.28 p.m. Fare.
second return, 2/5.

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OCTOBER, 1941



THE

Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, OCTOBER 13, 1941

1. Minutes.

2. Subject for the evening:

"Nature Through the Cinema."
Black and White and Natural Colour Films,
by Dr. N. A. Albiston.

3. Correspondence and Reports.

4. Election of Members.

AS ORDINARY MEMBER	PROPOSER	SECONDER
Mr. A. C. Errington, 27 Bonview Road, Malvern.	Mr. H. P. Dickins.	Mr. F. S. Colliver.
Mr. D. Greenwood, 34 Sutherland Road, Armadale.	Mr. N. Lothian.	Mr. L. W. Cooper.

5. Nominations for Membership.

6. General Business:

- (a) Forthcoming Excursions.
- (b) Questions by Members.

8. Remarks by Exhibitors.

9. Conversazione.

The Victorian Naturalist

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No. 694

PROCEEDINGS

The monthly meeting of the Club was held on Monday, September 8, at 8 p.m. The Vice-President, Mr. Geo. Coghill, presided over about 100 members and their friends. Apologies for absence were received from the President (Mr. P. Crosbie Morrison) and Mr. J. H. Willis.

SUBJECT FOR THE EVENING

Mr. R. E. Holtum, Director of the Botanic Gardens, Singapore, gave a most interesting lecture describing the various trees, climbers, orchids and ferns found in and around Singapore, many of which were illustrated by natural colour photos. Of particular interest was the close association between climatic changes and the blossoming of many plants, especially the orchids.

A vote of thanks was proposed to the lecturer by Mr. F. Morris, who mentioned that the lecturer had been busy in the National Herbarium giving invaluable help in the matter of identifying and checking the Malayan ferns, in addition to many of the Australian genera, which were also in need of revision. He also spoke of the lecturer's extensive knowledge of the East, especially in the botanical field, and said that Australia was fortunate to have the opportunity of hearing him.

Mr. Noel Lothian seconded the motion, which was carried with acclamation.

ELECTION OF MEMBERS

The following were duly elected:—As Ordinary Member, Mr. G. Price; as Country Member, Miss Ruth Clark.

GENERAL BUSINESS

The question of a wild flower emblem for Victoria was discussed, and coloured slides and coloured drawings were shown by Messrs. Reeves and Dickins respectively; but on the proposal of Mr. A. D. Hardy, seconded by Mr. R. W. Armitage, it was agreed that voting be deferred until next meeting.

Mr. Ivo Hammet mentioned a spray of leaves of *Persoonia* living in water, and continuing to grow, for over three months

EXHIBITS

Mr. Ivo Hammet.—Display of garden-grown flowers, the double form of *Eriostemon obovalis* being outstanding.

Mr. Chas. Daley.—Display of home-grown native plants, amongst which *Prostanthera rotundifolia*, *Calytrix Sullivanii*,

Lhotzka genetelloides and *Hardenbergia comptoniana* may be mentioned.

Mr. T. S. Hart.—*Eucalyptus yangoora* Blakely, from North Croydon, formerly included with *E. eugenioides*; *Hibbertia ovata*, from North Croydon, and not listed in the Census for "near Melbourne"; robust forms of *Drosera auriculata*, and specimens of *Cassytha glabella* showing fruits and galls.

Miss Joyce Baghel (per Mr. F. Morris).—Albino and normal forms of the tall greenhood, *Pterostylis longifolia*.

Mr. F. Morris, on behalf of Mr. P. Bibby.—A pot-grown orchid, *Pterostylis curta*, the tubers of which were collected near Ballarat early this year.

Mr. J. Gabriel.—"Sholls" of *Argonauta nodosa* Sol. from Victoria, also *A. argo* Linn.

THE PAPER-FLOWER AT WILSON'S PROMONTORY.

The potentialities of National Parks in the effective conservation of many disappearing species of native flora may be best gauged by examination of the vegetation in these sanctuaries. Unfortunately National Parks have to contend with fires, rabbits and cattle grazing, thereby somewhat nullifying the purposes for which such areas are set apart.

During the 1940 Christmas holidays a brief visit was made to Wilson's Promontory. Quite close to the Chalet at Darby River can be seen some examples of coastal vegetation that have practically passed out of existence in many other settled places.

A plant rarely met with nowadays, that consequently attracts attention, is *Thomasia petalocalyx* (F.v.M.), with the loosely applied vernacular of Paper-flower, by reason of the papery texture of the petals. A dwarf shrub, one to three feet high, it abounds in open situations along the track above the Chalet towards Tongue Point. Belonging to the Sterculiaceae and thus related to the Currajong, *T. petalocalyx* is the sole representative in Victoria of a distinctively Australian genus. The compact domes of dense greyish foliage superficially suggest small salt-bushes, and are covered in season with racemes of delicate mauve flowers. The plant in its habit of growth strikingly demonstrates an ability in arresting erosion. Thriving in poor loose dry soil in exposed wind-swept situations, it has a capacity to spread and cover a wide expanse of ground. Where fire had lightly burned part of the hillside countless seedlings have established a territorial pre-eminence.

On a previous visit during October a few years ago, the plant was observed in profuse flower. At the March and April meetings of the Club it was good to see specimens of the flower, garden-grown by Mr. I. Hammet and others. So the shrub has an extended blossoming period, and, furthermore, possesses the reputation of being a long-lived plant. Its appearance would enhance any suburban garden. Apart from its botanical interest as a sturdy member of a sparsely represented order of plants in Victoria, the Paper-flower deserves to be widely cultivated, if only to save it from extinction. As an erosion combatant, the plant could well be tried out on the Bay cliffs and foreshore gardens.

Also seen on the same trip on the extreme rocky headland of Tongue Point were a few bushes of Crimson-berry (*Cyathodes acerosa*), mentioned by Mr. J. H. Willis in the *Victorian Naturalist* (September, 1941) as occurring on the eastern cliffs of the Promontory. This means that *C. acerosa* also occurs on the western side—H. Stewart.

A NEW SPECIES OF *CORYSANTHES* (ORCHIDACEAE)
C. Fordhamii

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

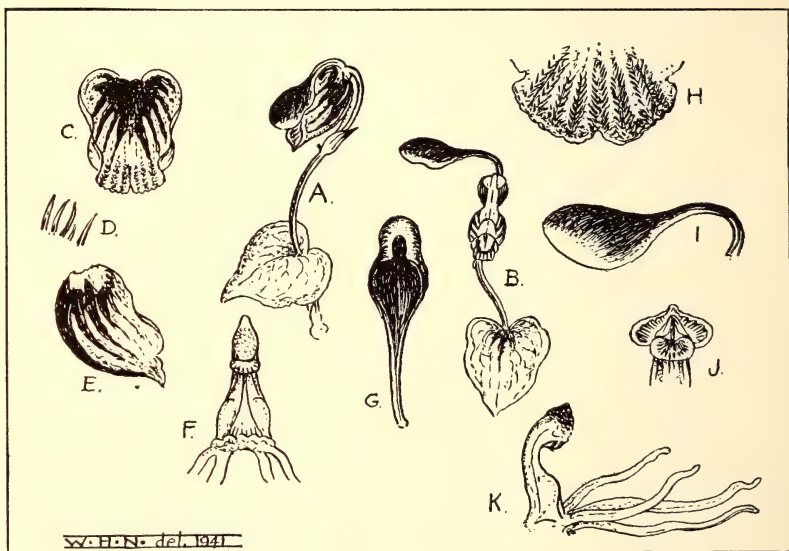
Planta parvissima, 2-4 cm. alta. Folium ovato-cordatum, infra viride, semper ferme supra humum positum. Flos gracilis. Sepalum dorsale 13-14 mm. longum, rubro-purpureum sed ad apicem pallidum; anguste cuneatum, ad basem sensim recurvum; lamina ovato-oblonga, vix 3 mm. lata, intus concava, ad apicem emarginata. Sepala lateralalia linearia, 7-8 mm. longa, ad labellum appressa. Petala breviora, filamentosa, ad labellum appressa. Labellum sepalo dorsale brevius, lineis rubro-purpureis conspicue striatum; tubulatum, non ad basem conspicue diminuens; os in fronte aliquanto parvum, horizontale, marginibus inferioribus striatis, emarginatis, intus fimbriatis. Columna comparate gracilis et longa, reflexa, alis obscuris. Stigma non prominens. Anther valvatus, obtusus; pollinia 4, granulosa.

A small plant usually from 2-4 cm. high, growing in boggy ground. Leaf ovate-cordate, quite green on both sides, usually well off the soil. Flower slender, on a very slender ovary, pedicel conspicuous and about 1 cm. long, or more. Dorsal sepal 13-14 mm. long, reddish-purple from the base to near the pallid apex; narrowly-cuneate, not abruptly contracted into a claw; the narrow posterior part gradually recurved; the lamina ovate-oblong, scarcely exceeding 3 mm. at its widest part, convex above, apex emarginate. Lateral sepals narrow-linear, often tinged pale-purple, 7-8 mm. long, closely appressed to the sides of the labellum. Petals much shorter, filamentose, appressed to the labellum between the dorsal and lateral sepals. Labellum shorter than the dorsal sepal, conspicuously striate with dark reddish-purple lines except for the dark purple basal third; close to the base is a transparent auricle through which the column is clearly visible; tubular, but not appreciably diminishing in calibre till quite close to the base; in front contracting to the rather small orifice, which is directed horizontally; lower lip of the orifice striate, with a large reddish-purple blotch immediately behind the broadly-emarginate apex. At the base of this patch and of the striate are irregular fimbriae directed inwards. No row of calli, as in *C. unguiculata* R.Br., leading from the orifice to the base of labellum. Column rather long and slender for the genus (3 mm. long in dissected specimen), much incurved close to the summit; wings obscure, but their membranes in front almost concealing the stigma. Anther valvate, 2-celled, obtuse; pollen-masses 4, very friable; no caudicle.

The discovery of this interesting species is due to Mr. F. Fordham, of Brunswick Heads, on the North Coast of N.S.W., who has done much valuable work in collecting and bringing into

notice orchids of the Brunswick River district, and in honour of whom I have named the new plant. It grows in boggy soil on the edge of Melaleuca scrubs, and flowers in August. It comes nearest to Robert Brown's *C. unguiculata* among Australian species of *Corysanthes*, and is also closely related to the New Zealand *C. Matthewsii* Cheesem. and *C. Carsei* Cheesem. Mr. Fordham first found it in 1932, and for some time it passed as a somewhat aberrant form of *C. unguiculata*, but the above description will show that it is really quite distinct.

Brunswick Heads, N.S.W., F. Fordham, Aug., 1932, 1940, 1941.



KEY TO ILLUSTRATION

Corysanthes Fordmanii, sp. nov.

- A.—Plant from side. (For natural size, see description.)
- B.—Plant from front. Dorsal sepal removed from original position.
- C.—Labellum from front.
- D.—Cilia (or glands) from lower lip.
- E.—Labellum from side.
- F.—Column from front.
- G.—Dorsal sepal from below.
- H.—Lower lip of labellum-lamina, showing rows of cilia.
- I.—Dorsal sepal from side.
- J.—Anther case open (pollen masses removed), also stigma.
- K.—Column sepals and petals from side.

WHAT IS AUSTRALIA'S "CROCODILE-BIRD"?

By A. H. CHISHOLM

From time to time over many years reports have circulated regarding a bird in North Australia that feeds frequently in the mouths of crocodiles. Ion Idriess, the author, has spoken to me on the subject more than once, and recently I asked him to write a few notes about the bird. This is his reply:

I searched the house yesterday for the old notes on that crocodile-bird, but can't locate them. I used the bird, I think, in *Men of the Jungle*; if so, goodness knows where the notes are. Vague memory has it that the bird is merely a bird—a little fellow on longish, thin legs. Quite often I've seen him sailing downstream perched on the head of a croc., both in North Queensland waters and the Territory. When a croc. is sunning himself on sand or a mud-bank he occasionally lies with his jaws open, and should one of these birds be about he will hop into the open maws and peck about among the teeth, taking his time about it, too. Undoubtedly he gets wogs of some sort among those rows of fangs.

However, apart from this bird (it's thinnish, I remember now, and of an indiscriminate colour), why not use the wiggy wagtail? He does precisely the same thing—and makes a song about it. On the Bloomfield River (N.Q.) in particular I've seen him on the croc.'s head as he floated downstream, hopping to the horny backbone should it be just above water, hopping to the horny head again, and dancing and wagging his tail and wings for all he is worth. When the croc. is sunning himself, if with wide-open mouth, I've seen the "wiggy" hop in and peck about industriously, hop out again and do a flutter on the old head, then hop in again and attend to business.

There is no doubt, of course, about the identity of "wiggy wagtail," but what is the other and more consistent "crocodile-bird"? Idriess's description—"merely a bird . . . thinnish, and of an indiscriminate colour"—is just a trifle airy, and I have no other data that would lead to identification.

"Crocodile-birds," however, are not restricted to Australia, and in other countries at least two species (belonging to different groups) have been identified. Informative notes on the point are given in *A Familiar History of Birds*, by Edward Stanley (fifth edition, 1851).

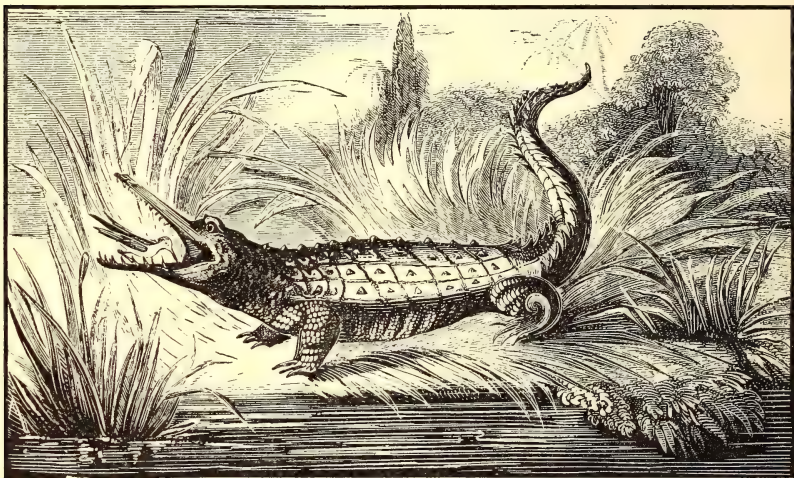
Incidentally, Edward Stanley, Lord Bishop of Norwich and President of the Linnean Society of London, has association with Australia because he was friendly with John Gould, and because one of his sons, Owen Stanley, was the distinguished commander of H.M.S. *Rattlesnake*, upon which he died at Sydney in 1851.

After remarking on a curious feeding habit of the lapwing, Stanley writes:

But we have another story to tell of a certain species of plover's meals, far more extraordinary, and which we should feel great hesitation in relating, had not the original observer of former days been supported by eye-witnesses of later times. Herodotus, an old Grecian historian, asserted that there was a small bird which, as often as the crocodiles came on shore

from the River Nile, flew fearlessly within their jaws, and relieved them of a peculiar kind of leech which infested their throats. This ancient historian added that, although other birds invariably avoided the crocodile, it never did this bird any injury.

So extraordinary a story was treated as fabulous by all naturalists. It is, notwithstanding, strictly true—M. Geoffrey Hilaire, an eminent and accurate French naturalist, confirms the fact beyond a doubt. The bird alluded to is the Egyptian plover (*Charadrius Ægyptiacus*), which sometimes enters the mouth of the crocodile, attracted thither, not, according to his account, by leeches, but by a small insect like a gnat, which frequents the banks of the Nile in great quantities. When the crocodile comes on shore to repose he is assailed by numbers of these gnats, which get into his mouth in such numbers that his palate, naturally of a bright yellow colour, appears covered with a blackish-brown crust. Then it is that this little plover, which lives on these insects, comes to the aid of the half-choked crocodile and relieves him of his tormentors; and this without any risk, as the crocodile, before shutting his mouth, takes care, by a preparatory movement, to warn the bird to be off.



Egyptian Plover and Crocodile.
(From Stanley's *Familiar History of Birds*.)

This singular process, moreover, is not confined to the crocodiles of Egypt; it has been noticed in those of the West Indies, where, when attacked in a similar manner by small flies, called Maringouins, a little bird (*Todus viridis*), which lives chiefly on flies and insects, performs the same kind of office.

Returning to Herodotus, Stanley says that although later notes regarding the food of "crocodile-birds" relate to flies, the old historian may have been correct in regard to leeches, since reports to the Linnean Society from India showed that large leeches were sometimes found in the throats of alligators.

It is a far cry from Herodotus (who died in 408 B.C.) to "Jack" Idriess, but doubtless the Australian "crocodile-bird" has been patronizing his host for as long as the Egyptian plover—thousands of years. Clearly, it is high time that he was identified.

Since the foregoing was written I have chanced upon another reference to the general subject in Frank Buck's new book, *Animals Are Like That!* Writing of the crocodile of Malaya, Buck says:

When he has dined, he basks in the sun and vulgarly offers a meal to the crocodile-bird or black-backed courser of the plover family, which often acts as his animated toothpick. You will frequently find the purplish-buff bird, with its black and white markings and blue legs, in the vicinity of the crocodile, where he is perfectly safe picking the crocodile's teeth.

It will be noted that the crocodile-birds of both Africa and Asia are plovers. Possibly, therefore, Australia's crocodile-bird (which is described as having long, thin legs) may also be a member of this group.

ECOLOGY OF BIRDS AND FUNGI

It has been stated that little if anything is known of the ecology of birds or fungi in Australia, nor of their commensal relationship.

To give a concrete example of these relationships let me quote investigations by Mr. J. G. O. Tepper, of Adelaide, to determine how the destruction of honey-eating birds may affect the sooty-mould of citrus trees. Sugar-loving brush-tongued parrakeets and other birds I have observed busy in the early morning among the foliage of gums and other trees upon which honey-dew appeared. Later in the day the ants occupied these in overwhelming numbers and drove the birds away, protecting the insects and cleaning the foliage.

The complex relation seems to be in the following form:—(1) Scale or other insects are used directly to attract the ants by their sweet secretions; (2) ants, like a standing army, protect the foliage against the attacks of leaf-eating animals; (3) abundance of honey-eating birds is necessary to keep the scale or other insects within reasonable bounds; (4) reduction of these birds by man tends to favour the increase of the scale insects and their produce; (5) scale and other insects now get the upper hand, and the ants, protecting the insects, also favour their increase; (6) the consequence is superabundance of honey-dew, and this is taken advantage of by the spores of the fungus to spread and multiply.

Thus the destruction of the honey-eating birds has brought about an increase of the honey-dew and of the sooty-mould which lives upon it.—A. H. Mattingley.

FURTHER NOTES ON THE HUNTSMAN SPIDER
(*ISOPEDEA IMMANIS*)

By EDITH COLEMAN, Blackburn, Victoria

In some notes on the Huntsman Spider (*V.N.*, Jan., 1941) I stated that it was quite usual for the mother to remove an egg-sac from the glass wall of her cage, and to attach it to the roof. On two occasions I have noted that the edge of a sac has been torn in the process. In the first instance, as the slit was not repaired, I was able to watch development of the eggs.

On 5/11/40 a mother Huntsman removed and re-suspended her sac. It was slightly torn at the edge. I saw her repair the slit, not very neatly, as the sac swung from the roof. She slid her spinnerets to and fro over the slit without raising her abdomen. Normally this movement gives the close, smooth texture of the sac, but she did not continue the movement long enough to complete the work. At 6 p.m. she was resting over the sac as it swung from a few threads—the normal “brooding” position. She then left the sac, but had returned at 10 p.m.

At 7 a.m. next day I found that she had eaten her eggs and was still munching the sac—now a mere crumpled mass which she was apparently unable to deglutinate. This was my first black mark against the Huntsman Spider as a mother. Later she dropped the pellet on the floor of the cage. It was quite dry and hard to the touch. There were four eggs on the floor of the cage.

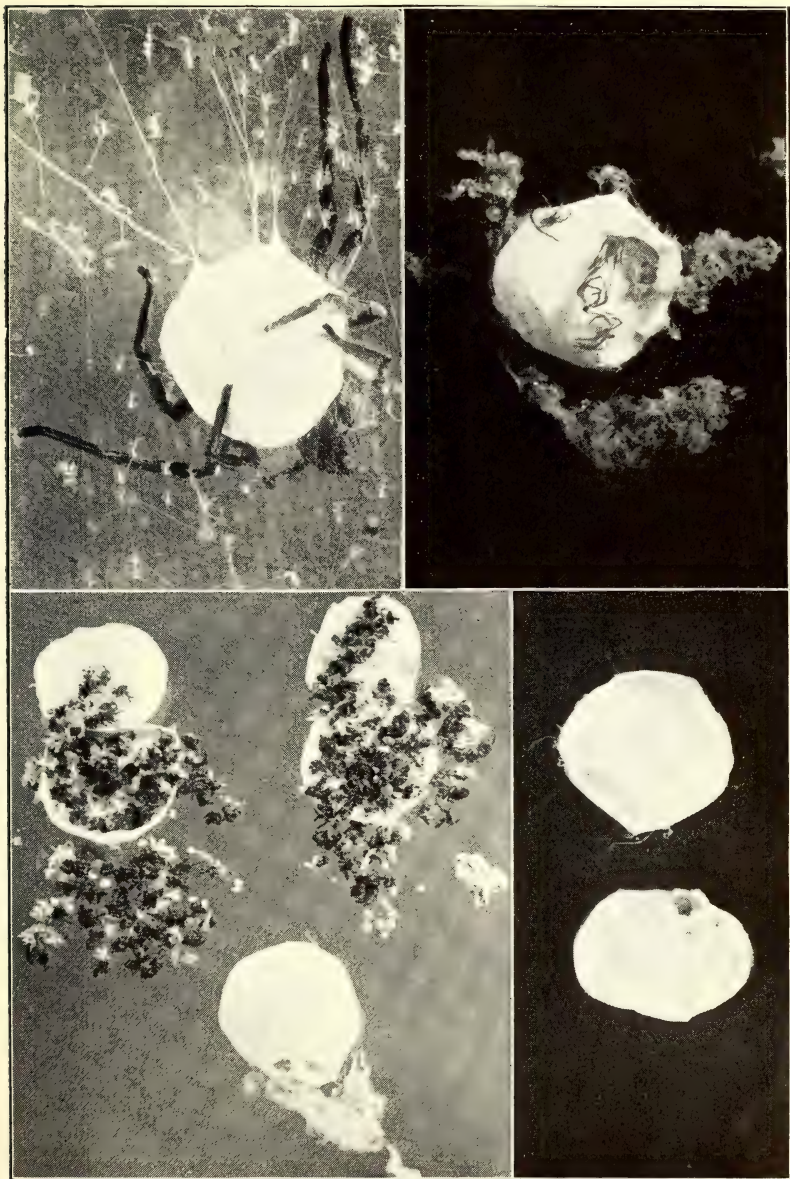
As the spider had previously slain and devoured her mate, another male Huntsman was placed in the cage on November 10, 1940. They were friendly at once, remaining together on the roof, legs overlapping, in the daytime, coming down the walls at night to feed on mealworms or flies. This continued until April 26, 1941, when I found the “lady” eating the male. It will be noted that their friendly partnership had lasted for more than five months.

As she had eggs to develop she was probably avid. She is now (August 18th) motionless on the roof and should shortly construct her egg-sac.

Opinion is divided as to how the spiderlings emerge from the egg-sac. I have on five occasions seen a mother Huntsman tear an opening with her fangs, and have watched the spiderlings emerge one by one. Inserting a palp, she presses out the convex surface of the sac. She may thus continue to enlarge the opening without danger to the spiderlings within. It is for this that she waits so patiently, practically foodless, for weeks.

One may note her eagerness several days beforehand, as her palps tap the surface of the sac. These undoubtedly apprise her of the ripe moment. Froggat (1935) states that the spiderlings “cut

PLATE XIX



Top left: Sac swinging from roof of cage. Top right: Sac showing silk as spun by spiderlings after emergence. Lower left: Sacs 1 and 2 opened and showing dead spiderlings and a few infertile eggs; below, an empty sac with silk spun by emerged spiderlings. Lower right: No. 1 sac photographed August 14 and (below) a sac showing opening torn by mother.

Photos.: Edith Coleman.

their way out" at about a week old. Noting the extreme delicacy of the spiderlings at this stage, and the toughness of the silk, it would seem a prodigious feat. In order to test it, an egg-sac, constructed on 7/2/40, was removed on 26/2/40, during the mother's absence. An infertile capsule was accepted and anchored in its place. As the surface of the stolen sac had not become depressed, it was evident that the eggs were fertile. Moreover, movement could be detected when the sac was illuminated.

I had previously made a small opening in a sac about three weeks after stealing it from a mother Huntsman, and had sealed it up with transparent gum-paper as soon as I saw that the spiderlings were alive and active. They died within the sac.

This time I did not open the stolen sac but examined it from time to time under a powerful electric light. I photographed it, intact, on August 14th. It was still convex, but I could detect no movement when the sac was illuminated. I opened and photographed it, with the dead spiderlings, on March 9th. There were one or two infertile eggs. As they were photographed in a vertical plane, scores of spiderlings fell out of the sac during the slow exposure.

To make quite sure that the spiderlings do not cut their way out, a second sac was tested. It was constructed about 28/11/40. It was removed on 17/12/40. Movement within could be seen when the sac was illuminated. It was swollen and convex. If eggs were within they did not move. (If infertile eggs are within a sac they become dry in from seven to ten days, and roll about when the sac is shaken.) This sac was opened and photographed with No. 1 on March 9, 1941. The spiderlings were all dead. There were a few infertile eggs.

I was reluctant to take their sacs from such devoted mothers; but in each instance an infertile capsule, deserted by another spider, was immediately adopted, and "brooded" until the mother seemed aware that there was no life within. This mother left the infertile sac next day. I dropped it into another cage in which was a lonely male Huntsman. He ran to it at once. It was pretty to see him tapping it with his palps. He stayed over it "talking" to it thus for the whole day, but deserted it at night.

It will be noted that the torn edges of newly-made openings of sacs are directed outward, as one expects if the mother tears them. They should be directed inward if torn by the spiderlings. It is, of course, possible that they are pushed outward as the spiderlings emerge, one by one; but I do not think so, for the hole is quite large enough to permit the spiderling to pass through with ease.

So far, then, everything seems to support the view that sacs are opened by the mother; but there is one point to clear up. I

think this lies in the entomologist's field. One sometimes finds an empty Huntsman sac with one or two clean-cut, not torn, pin-holes in the still convex surface. These holes appear too small to permit emergence of such large spiderlings as those of the Huntsman. Moreover, they are not surrounded by tiny cast skins and threads of spiderling-silk, as is usual with torn openings.

The emergence of a family is a delightful thing to watch, well worth the trouble of feeding a Huntsman or two. It is a privilege to witness the eagerness of a mother as she releases her babies, and the careful manipulation of her lengthy legs so that she never appears to tread on the delicate creatures; and, withal, her every movement is graceful. We must, however, remember our own responsibilities if we deprive these clever creatures of their liberty. Water is very necessary to them. The walls of a cage should be sprayed, or sprinkled with an eye-dropper. One may see the spiders eagerly raking the drops into their mouths with the palps.

Mealworms are accepted, but flies, moths and grasshoppers are preferred. The spiders take little food in the cold months, and a more or less complete hibernation takes place in June and July.

Whether all spider mothers release their spiderlings from closely-spun sacs I do not know. The Death's-Head spider clings tenaciously to her three to ten spherical sacs until she detects movement within. This occurs in the order in which the sacs were constructed. She punctures each one in turn—a mere pin-hole. I have never seen her perform this office. She remains on the cluster of sacs until the spiderlings have dispersed, leaving them only for short periods at night. One may often see her shrivelled body clinging to the mottled brown cradles long after the spiderlings have vanished.

EXPEDITIONS TO THE MALLEE

Because of the bountiful season, a record number of expeditions—at least four—have been conducted to the Victorian Mallee this Spring by Melbourne naturalists. A party from the Bird Observers' Club went to the far north-west. A group which included Messrs. P. C. Morrison, J. H. Willis, C. E. Bryant and others went to the Hattah district. Messrs. A. H. Chisholm, W. H. Nicholls, and R. T. Littlejohns visited the Nhill region. Messrs. Ivo Hammet and R. G. Paynter, together with Horsham friends, journeyed from Nhill to Murrayville, and afterwards united with Mr. Chisholm's party (making nine persons in all) and spent a day in the Mallee near Mt. Arapiles. All of the wanderers report having spent a very interesting time, both in respect of plants and birds. Mr. Hammet does not recommend the journey from Nhill to Murrayville for travellers by car. His party used a utility truck and found the 70 miles or so of road—largely a rough track over sand-ridges—very trying in spots.

CALOCHILUS CAMPESTRIS, R.Br.

(With Notes on some Allied Forms)

By W. H. NICHOLLS, Melbourne

Calochilus campestris, R.Br.,¹ according to Bentham,² is indigenous to New South Wales, Queensland and Tasmania. Included within this distribution is the variety *grandiflora*, Benth.—a form now raised to specific rank by H. M. R. Rupp.³ Present-day Floras, however (also other works concerned with the botany of eastern Australia) include Victoria in the range of *C. campestris*.

In view of the elevation of Bentham's variety *grandiflora* to the rank of species, Queensland must now be omitted from the distribution of *C. campestris*, because the typical form has not yet been found in that State. It is singular that Robert Brown lumped this splendid form with his specimens of *C. campestris* and that Bentham later considered it a mere variety. The two have but little in common, although the column structure is similar in both. The present *C. grandiflorus* Rupp, is the largest member of the genus and is readily recognized by its stately appearance and unusual colour-scheme.

Concerning typical *C. campestris*, Bentham remarks: "Brown's original Port Jackson specimens belong to the above described² typical forms, and correspond with several of Woolls's, as also with the majority at least of Tasmanian ones, with Lindley's *C. herbaceus*,⁴ and with the figure in the *Botanical Magazine*⁵ from a drawing made in Tasmania." (See also Gunn's figure⁶ wherein the leaf is represented by a mere sheathing, subulate bract, while the glands at the angles of the column wings are not visible.)

Lindley's *C. herbaceus*⁴ (regarded by Bentham as conspecific with *C. campestris*) is very probably the pale form of *C. Robertsonii* (figured as *C. campestris* by Fitzgerald). Now, the figure in Curtis's *Botanical Magazine*,⁵ which Bentham quotes as true *C. campestris*, agrees with the plant described and figured by R. S. Rogers under the name *C. cupreus*, (sp. nov.)—material from "near McLaren Vale (South Australia)."

The salient and only differentiating character, purporting to separate Rogers's *C. cupreus* from Brown's *C. campestris*, is here given:

- Base of labellum glabrous
with several raised longitudinal lines—*C. cupreus*.
- Base of labellum smooth and thickened
without raised longitudinal lines—*C. campestris*.

The writer has long sought Robert Brown's *campestris*, looking for a plant consistently distinct from Rogers's *cupreus*. With this end in view, all recorded habitats of both species have been combed (as far as possible) by the writer and others, in Victoria, New

South Wales and Tasmania. A critical examination of the material thus obtained proves that here is yet another instance of a single species masquerading under two names. The apparent reason for this confusion lies in the capricious nature of the plant itself and in the omission from original descriptions of small but important details in the structure of the labellum.

New South Wales specimens of *C. campestris* collected by Mr. G. V. Scammell were identical in every particular with those found in some quantity by Mr. A. B. Braine and the writer near Cravensville (Tallangatta Valley, N.E. Vic.). In all this material there was manifest variation in the base of the labellum and in its apical ligule (see figures).

Alluding to the N.S.W. specimens, Mr. Scammell writes: "*C. campestris* is without doubt our commonest *Calochilus*. It grows literally in hundreds along the roadsides at French's Forest, near here (Mosman), and at Gosford." No Tasmanian specimens of *C. campestris* were received, but Archdeacon Atkinson established the undoubted presence of *C. Robertsonii* in the island State (Hagley, Nov. 1932). This name is not listed in Tasmanian records, but Rodway's figure⁸ (under *C. campestris*), is undoubtedly a good representation of Bentham's species. His description in the *Tasmanian Flora*⁹ (also under *C. campestris*), though lacking essential details, surely describes *C. Robertsonii*.

Other localities from which material was obtained, all of which I have now determined as *C. campestris*, are:

Victoria.—Hall's Gap-Pomonal (W.H.N.); near Mt. Cobbler (D. Matthews); Anglesea (W.H.N.); Yarram ((Miss) E. Bond); Healesville ((Mrs.) E. Coleman); Wonthaggi (R. Bond); Foster (F. Barton, junr.); Genoa, E. Gippsland (N. A. Wakefield).

New South Wales.—Toronto, near Newcastle (A. N. Burns); Weston (H. M. R. Rupp).

In this journal,¹⁶ I have mentioned an ostensible find of *C. campestris* in the Tallangatta Valley. This interesting specimen of five flowers proved a teratological form of *C. Robertsonii*, the flowers of which possessed smooth (more or less) bases to the labella (see figures (E)).

Very closely allied to *C. campestris* is the remarkable *C. saprophyticus*, Rogers.¹¹ This rare form has "a large thickened tuberous rhizome similar to that of *Gastrodia*." Other *Calochilus* species possess the commoner tubers (see figure of *C. campestris* given here).

The original habitat of *C. saprophyticus* was Cravensville, and the flowering period November-December. (1918, 1920, the only records)—Collectors A. B. Braine *et* F. J. Supple.

With Mr. Braine I searched (some years after) the hillslope where this strange form was discovered, "an almost shadeless place," but without success. Later, on the "Old Dart diggings track," a leafless *Calochilus* species was found in an open glade. It was determined there and then (after a casual inspection only) as *C. cupreus*. But was this specimen the rare *saprophyticus*?

Collectors should very carefully examine *Calochilus* specimens for any unusual factor, notably absence of foliage. (Dr. Rogers records his specimens of *C. saprophyticus* as having "leaf incomplete.")

Late in November, 1937, the writer visited Anglesea (Vic.), where in a clearing among the gums a sturdy pale-coloured *Calochilus* was seen. It was subsequently removed to the vasculum as *C. cupreus*—a probable new record for the district. The season being well advanced, it was well past its prime, nevertheless the details of the uppermost flower were apparent. Later in the day it was noticed this specimen was *quite leafless*. Was it Rogers's *C. saprophyticus*? A search was at once instituted for this plant's original position, but the *exact* spot was not then located; thus a golden opportunity of examining the underground system was missed. In October of the following year the locality was again searched and the habitat located, but the only reward was a poorly developed specimen (leafless also). That year, and in the subsequent seasons, droughty conditions had persisted. However, the spot remains marked pending a bounteous season.

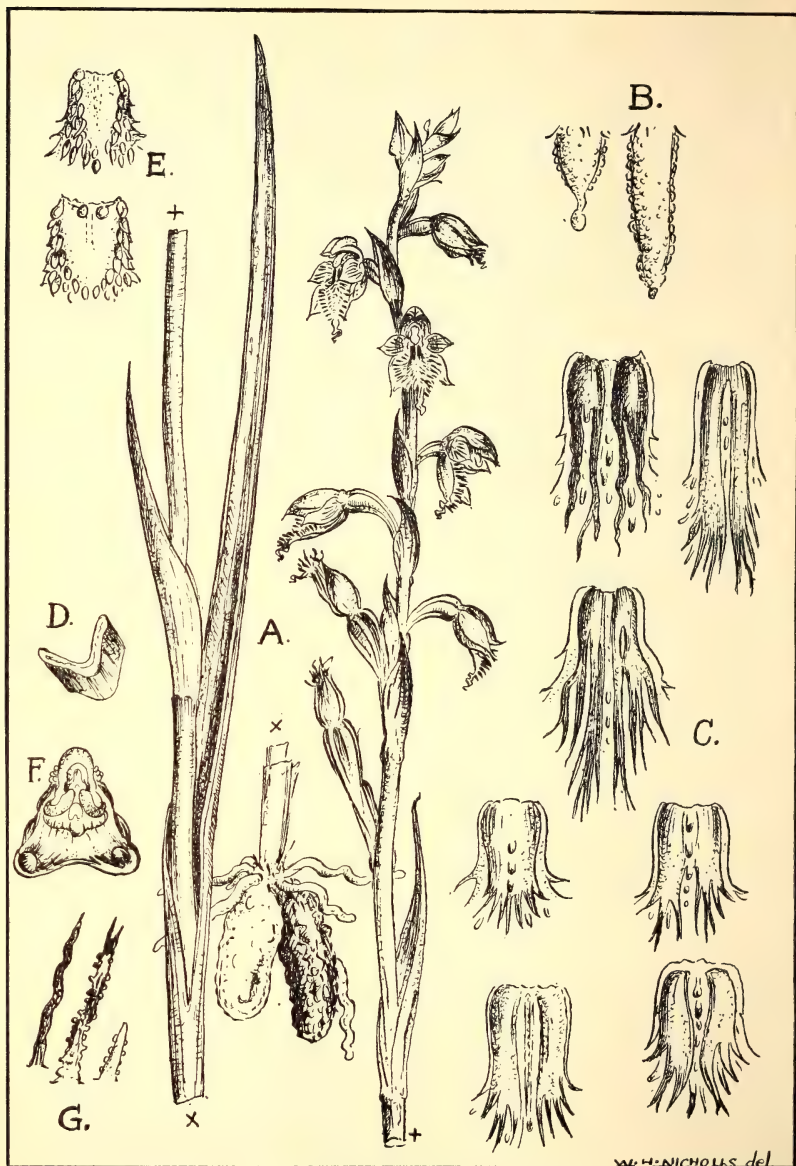
It is well to record the foregoing experiences, since closely related yet distinct species are sometimes confounded, unless carefully examined.

To return to the typical form of *C. campestris*. The type material is in England. A total war is waging! Thus examination of Brown's specimens is difficult.

But is it really necessary to pursue the matter further? Bentham had access to this material and identified it with the beautiful figure in Curtis's *Botanical Magazine*. His description of the plant is correct, even though the variability of the labellum base, and perhaps of foliage also, escaped notice.

R. D. Fitzgerald's interpretation of *C. campestris* is incorrect. He illustrates a widespread, pale-flowered variety of *C. Robertsonii*, which, in some localities at least, is fairly abundant. Mr. G. Lyell, of Gisborne (Vic.), records it from the Pyrete Ranges (I have seen it here also). Mr. Lyell writes regarding it:

This pale form is abundant not far from the north-eastern slopes of Mt. Bullengarook. Here they favour the sheltered slopes of the hills, under the trees and shrubs. The opalescent hue of the flowers may be due to soil conditions; on the other hand, the abundant shade provided by the trees, etc., may be the direct cause, as it was noted those specimens on the fringe of the timber produced flowers of quite normal colouring.

*CALOCHILUS CAMPESTRIS*, R.BROWN (&c.)Syn. *Calochilus cupreus* Rogers)

Figures.—A.—A typical specimen of *C. campestris* R.Br. B.—Apical ends of labella. C.—Showing the variable character of basal portion of labellum in *C. campestris* (7 figures). D.—Section of leaf (*C. campestris*). E.—Basal portions of labella (ateratological specimen of *C. Robertsonii*, Bth.). F.—Column from front (*C. campestris*). G.—Character of hairs (labellum-lamina of *C. campestris*).

In the Proceedings of the Linnean Society of New South Wales¹² Rupp refers to a presumed valid form of *C. campestris*, but a later and more careful examination of this—"a Smith's Lake specimen"—showed it to be identical with his *C. grandiflorus*.

AMENDED DESCRIPTION OF *C. CAMPESTRIS*, R.BR.

A robust plant, often attaining a height of 45 to 60 cm. Leaf erect, 12-30 cm. long, rigid, fleshy, triangular in section, deeply channelled, sheathing at the base. Stem-bracts 2, 5-8 cm. long, green or coppery-coloured, subulate, clasping; floral bracts much smaller. Flowers racemose, comparatively small, 7-15, yellowish-green with reddish-brown, purplish or light rufous markings. Sepals about equal in length, yellowish-green or green with reddish-brown central stripe; dorsal sepal broadly-ovate, cucullate, shortly acuminate, lateral sepals narrower than the dorsal one, dilated but not widely on each side of labellum. Labellum with fleshy rectangular base and wide triangular lamina, longer than the other segments, golden yellow or greenish with finely fimbriated margins and reddish-blue hairs with metallic lustre; hairs often gland beset, the narrow basal portion of labellum entirely smooth (devoid of glands) or with brilliant blue or reddish-blue or purplish-black raised lines with metallic sheen; the latter more or less fused and ending in free or divergent hair-like extremities; other hairs on lamina not dense and shorter than in *C. Robertsonii*, Bth.; tip of labellum recurved and ending in a short (sometimes brief) gland-margined, sinuous, strap-like appendage. Column short, very wide, and open at base, the lower angles having a conspicuous gland; no ridge connecting the glands. Anther long, horizontal, with a broad apex. Stigma transverse.

Flowering Period: October-January (according to altitude).

Distribution: N.S.W., Vic., S. Aust., Tas.

Concerning the leafless forms mentioned above, is *C. saprophyticus* Rogers concerned; and are those with the abbreviated leaf-lamina transitory forms; or are they all variants of the one valid species, i.e., *C. campestris* R.Br.—interesting examples of a widespread species adapting itself (owing to man's interference) to the exigencies of a much-altered environment?

I wish to thank Mr. J. H. Willis, of the National Herbarium, Melbourne, for his kind assistance in the compilation of this paper.

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TRIALS OF A WADING COLLECTOR

By HARRY BURRELL, O.B.E., F.R.Z.S., Sydney

Here are a few haphazard adventures that I have experienced while "Ornithorhynchusizing."

Notwithstanding the fact that black snakes are frequently met with under ledges and in the crevices and burrows in river-banks, the collector, to do his work thoroughly, is compelled to don a bathing costume and work in the river, at times over his head, through mud, slime and weeds (to say nothing of snags) in search of burrow entrances. This may appear refreshing to the man on top who holds the rope, but it is not all easy faring for man submerged. I have several times been bumped on the abdomen by darting creatures, but on account of the disturbed water was unable to identify them. They could have been fish, tortoises, water-rats, or duck-bills—but snakes could be just as impolite.

I have been told that snakes cannot strike in the water. Well, I have seen a black snake with its head, neck and 18 inches of its length standing out above the water, like the neck of a swan. However, it did not prevent me from searching the ledge where I saw it finally disappear, and, as luck would have it, while searching, I secured a moor-hen. I have taken two of these birds at different times: one from the seat of *Hydromys* and the other four feet up a platypus hole. At another time I pulled a coot from under a ledge, also a spotted crake. Water dragons are frequently unearthed in platypus burrows also, and there is no denying you get an uncanny shock occasionally (especially if your head is down) when a moor-hen, for instance, suddenly flutters right into your face.

Of course there are other little items to keep one guessing, for to become entangled, bare-footed, in a slimy submerged snag, and then enmeshed in the folds of writhing reeds and weeds, does not add vim to the venture.

Perhaps worst of all was the shocking legs and arms I developed through being, I think, too long among the weeds. My legs in particular, from the bottom of a one-piece costume to the tops of my feet, became so blotched with lumps that I could not sleep at night because of the irritation. In my tired half-sleep I would scratch and cause a water-like blister to burst; but I could not get any ease until the following day, when I again returned to the water. I have also noticed that white or grey horses, compelled to enter the water to feed on the weeds (owing to severe drought) had their legs, as far as the water reached, stained orange as if painted with iodine.

NEW ORCHID FOR VICTORIA

A curious fact is reported by Mr. W. H. Nicholls. When visiting the Mallee recently in company with Messrs. A. H. Chisholm and R. T. Littlejohns, he found many interesting orchids, but he did not discover any new species until looking over a settled district—near Maryborough—on the way home. Then, to his delight, while his companions were pursuing a rare bird he came upon a new sun-orchid (*Thelymitra*). A very pretty flower, it will be described shortly in this journal.

Mr. Nicholls reports also that the plants of the Mallee during the present springtime are wonderfully interesting, some places being aglow with flowers of scarlet, purple, white and various other colours. Of special interest are several species of *Grevillea*, the Blue Boronia, the Lemon-scented Zieria, and the Red Mint-bush.

The photograph of Crimson-berries in the September issue of this journal should have been credited to Mr. J. H. Willis.

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EXCURSIONS

SATURDAY, OCTOBER 11.—Frankston. Subject: Orchids. Leader:
Mr. Chas. French. Train from Flinders Street at 1.28 p.m. Fare,
second return, 2/5.

SUNDAY, OCTOBER 19.—Wonga Park. Subject: Wild-flowers and
Bell-birds. Leader: Mr. Ivo C. Hammet. Travel by the Warrandyte
bus leaving opposite Ball & Welch's, Flinders Street, at 11 a.m. Fare,
4/-. Further details will be supplied by the leader at the October
meeting, and names of those going should be handed in then.

SATURDAY, OCTOBER 25.—Croydon. Subject: Wild-flowers. Leader:
Mr. T. S. Hart, M.A., B.C.E. Travel by Healesville (and/or Warburton)
train, leaving No. 1 East Platform of Flinders Street Station
(below Princes Bridge Station), at 1.35 p.m. Fare, second return, 2/3½.

TUESDAY, NOVEMBER 4 (Cup Day).—Club Picnic to Rickett's Point.
Subject: Shore life; general. Leader: The President. Travel by train
to Sandringham, then by Beaumaris bus from Sandringham Station,
and alight at the Kiosk at Rickett's Point. Train, 10.15 a.m. from
Flinders Street (subject to slight alteration on account of holiday).
Members take lunch; also tea, if they desire to remain late. Hot
water will be available.

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Vol. LVIII, No. 7



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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1941

Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, NOVEMBER 10, 1941

1. Minutes.
2. Subject for the evening—
 "Vegetation, Exploration and Settlement," by Dr. R. T. Patton.
3. Correspondence and Reports.
4. Election of Members—(See paragraph in this issue).
5. Nominations for Membership.
6. Plebiscite for Floral Emblem.
7. General Business :
 - (a) Forthcoming Excursions.
 - (b) Report on Wildflower Show.
 - (c) Questions by Members.
8. Remarks by Exhibitors.
9. Conversazione.

The Victorian Naturalist

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No. 695

PROCEEDINGS

The monthly meeting of the Club was held on Monday, October 13. The President (Mr. P. Crosbie Morrison), presided over about 120 members and their friends.

SUBJECT FOR THE EVENING

The subject matter contained in the colour films shown by Dr. N. Albiston was new to the Club. The main feature was Phillip Island, showing its coast-line and the neighbouring districts of the mainland. In addition, the koalas feeding, and the various attitudes and stances they adopted when being "shot," caused amusement. Another feature shown was autumn foliage in and around the Healesville district.

A vote of thanks was proposed by Mr. A. D. Hardy and Mr. E. E. Pescott, and was carried by acclamation.

ELECTION OF MEMBERS

The following were elected as Ordinary Members:—Mr. D. Greenwood, Mr. A. C. Errington.

GENERAL BUSINESS

Owing to lack of time, the report on the Wild Flower Show and the plebiscite for the Floral Emblem were postponed until the next meeting of the Club.

EXHIBITS

Mr. R. G. Painter.—A display of 20 cultivated native plants. Of special interest were *Prostanthera incisa rosea*, *Grevillea thelmaniana*, *Cassia eremophila*, *Brachysema lanceolatum*, *Boronia heterophylla* and *Eucalyptus*, spp.

Mrs. J. J. Freame.—Marine mussels (*Mytilus*) opened to show the association or commensalism of a soft-bodied pea-crab (probably *Pinnotheras pisum*). Collected at Rosebud, August, 1941. The crab lives inside the mantle cavity of the mussel, obtaining its food from the flow of water set up by the mussel. Also a photograph showing the head of an oar-fish, which measured in length 9 ft. 11 in. (minus the tail); it was reported at Portland, where it had been attacked by five seals.

DEC 13 1941

AN ADDITION TO THE ORCHIDACEAE OF VICTORIA

(Thelymitra Chisholmii, sp. nov.)

By W. H. NICHOLLS, Melbourne

Planta gracilis circa 15-18 cm. alta. Folium lanceolatum vel lineare, canaliculatum circiter 7-9 cm. longum. Flores 1 vel 2 magni, violaceo-purpurei, striati, 2.5-3 cm. diametro.

Columna erecta, circiter 5-7 mm. longa, nequaquam cucullata; lobi laterales carnei, glandulosa-ciliati, lutei. Anthera magna, lata apice obtusa.

A slender purplish plant about 15-18 cm. high. Leaf dark green; lamina lanceolate, wide at the immediate base, narrowing abruptly upwards, or narrow linear, channelled, margins inflexed about 7-9 cm. long, contracted below to a tubular base.

Stem-bracts 1-2, closely sheathing, about 1.5-4 cm. long. Flowers 1-2, large, about 2.5-3 cm. in diameter; perianth-segments *prominently striate*; elliptic-lanceolate, acute; sepals purplish, violet towards the base; petals violet with purplish tips, slightly shorter and narrower than sepals. Column about 5-7 mm. long, including the upraised wings, *not hooded*, deep violet; upper margins yellow; lateral appendages (wings) *fleshy*, deep golden yellow, *ovate, flat, pedicellate*, about 2 mm. long; *margins glandular-ciliate*; outer surface somewhat rugose with granulations, or cilia, as on the margins, at first in an erect position on both sides and above the anther, later assuming a more or less horizontal position in front of and lower than the anther case.

Anther large, with a broad, rounded apex, almost as broad as long, yellow with some rufous markings, situated well above and behind the stigma, its lower margin adnate to the column roof. Anther dehiscing readily when flower expands widely, then relaxing to a position between the now embracing column wings. Stigma small, viscid, circular, oblique, situated in the depression formed at the base of column by the lower angles of wings. Pollinia 4, in 2 pairs, pure white, powdery, connected directly with the prominent viscid disk.

Flowering in September.

Habitat: Avoca Road, near Maryborough. (W. H. Nicholls, Sept. 19-20, 1941).

I have named this orchid after Mr. A. H. Chisholm, F.R.Z.S., the well-known Australian ornithologist, and present Editor of this Journal, not only for his long-standing interest in our orchidaceous plants, but also for the consistent encouragement and support which he has always given to everyone interested in Australian orchid lore.

The present and only recorded habitat of *Th. Chisholmii* was suggested by Mr. Chisholm (we were returning to Melbourne from an expedition to the Mallee scrubs of north-west Victoria, then gay with flowers, birds, etc.) as "a place worth looking over"—a district intimate to A.H.C. from his early boyhood days.

The new species is well adapted for self-pollination, the perianth opening freely and widely at a comparatively low temperature (75° F.); the consequent uplifting movement of the anther deposits the pollinia away from the rostellum (the disk sometimes remaining in position) by a forward semi-circular movement directly on to the viscid surface of the stigma immediately below, where they



Mr. W. H. Nicholls discovering his new orchid near Maryborough.

Photo: R. T. Littlejohns.



Mr. Ivo Hammet and Horsham naturalists collecting plants in the Mallee.

Photo: A. H. Chisholm.

remain intact for a more or less lengthy period before spreading over the area—conspicuous and intriguing objects to an interested observer. School children (wonderful observers!) know this sun-orchid as “*Babes in the cradle*,” an apt title suggested by the presence of the conspicuous pollen-masses at rest on the cushion-like surface of the stigmatic plate (see figures of flower).

Th. Chisholmii lends itself also to cross-pollination, for it was observed that a small—but very elusive—native bee was at work in one flower. Probably bees help in the dispersal of the pollen grains already in position on the stigma, a means of cross-pollination even at this stage; and, be it noted, the touch of a pencil point extracted the pollinium intact from its position above the stigma.

Th. Chisholmii appeared to be plentiful in the habitat (under the ironbark eucalypts) growing singly or in tufts of several plants, in addition to the diminutive non-flowering, fliform-leaved, juvenile plants arising from the parent sheath, suggesting a third mode of increase. *Grevillea alpina*, Ldl., (a yellow-flowering variety), is the most abundant shrub in the association. Orchid species in the immediate vicinity were *Diuris maculata*, *Glossodia major*, and *Caladenia carnea* (plentiful); *Cal. angustata* (a few); and *Thel. pauciflora* (several in early bud stage).

In the field the new species may have been mistaken for *Thel. aristata** (the Scented Sun-orchid), which species it resembles superficially, but the former has a richer colour-scheme; also many points of differentiation in the structure of the column. Its closest affinity, however, appears to be *Thel. Matthewsii*, Cheeseman (*Thel. D'Altonii*, Rogers). It resembles in some degree also the following forms:—*Thel. chasmogama*, Rogers; *Thel. luteociliata*, Fitz.; and *Thel. Macmillanii*, F. Muell. The following table, however, serves as a ready guide to determination.

Hood with the 2 lateral lobes, large, fleshy, glandular-ciliate, no dorsal crest.

Flowers 1 or more, violet purple. Leaf lanceolate or linear.

= *Th. Chisholmii*.

Hood with the 2 lateral lobes, small, fleshy, no dorsal crest. Flower solitary, violet-mauve. Leaf spiral.

= *Th. Matthewsii*.

Hood with the 2 lateral lobes, yellow penicillate; dorsal crest. Flowers 1 or more, pink. Leaf linear.

= *Th. chasmogama*.

Hood with the 2 lateral lobes, yellow-penicillate; short dorsal crest. Flowers 1 or more, pink. Leaf linear.

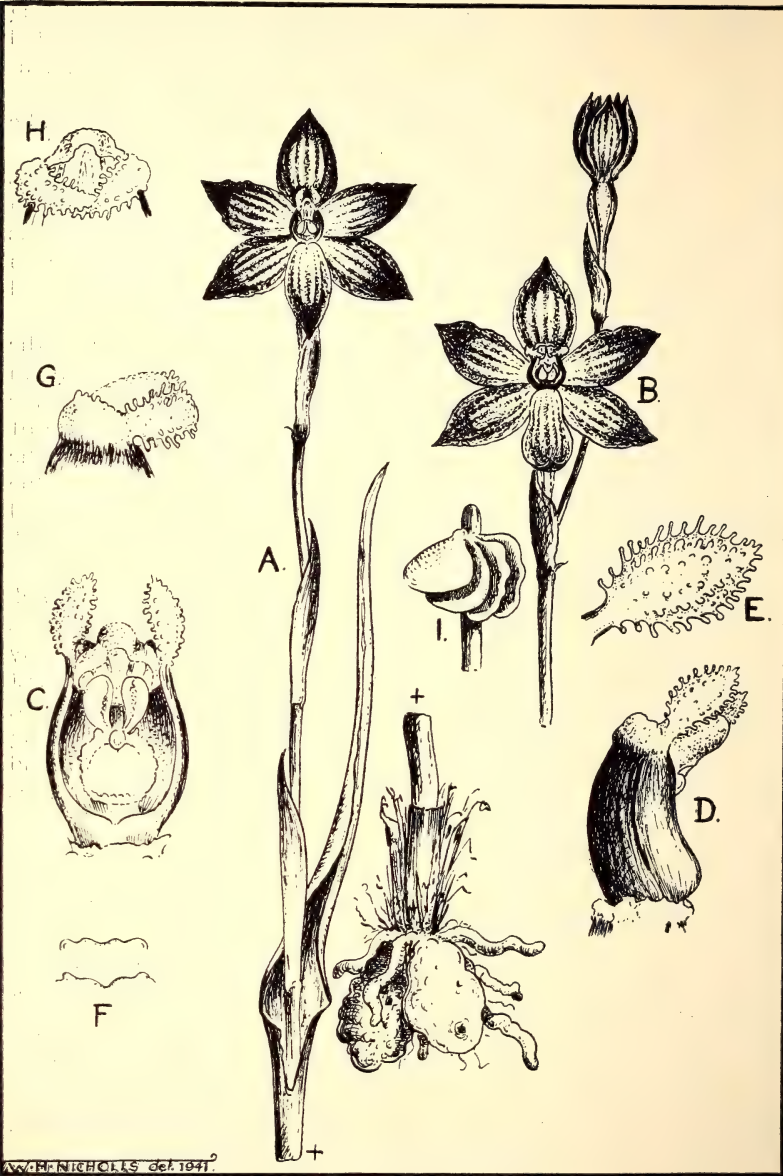
= *Th. luteociliata*.

Hood with the 2 lateral lobes, long, fleshy-glandular, no dorsal crest. Flowers 1 or more, salmon-pink. Leaf linear.

= *Th. Macmillanii*.

Th. Chisholmii is richly endowed with colour, both in plant and flowers—is more bright indeed than the majority of its congeners,

* This *Thelymitra* is seen also in the habitat and on the surrounding hills only when the flowering season of the *sp. nov.* is past.



Thelymitra Chisholmii, sp. nov.
(For Key, see Page 101)

by reason of the added charm of prominent striæ to the brilliant colour-scheme. The flowers are perfumed during the hours of sunshine.

KEY TO ILLUSTRATION

Th. Chisholmii, sp.nov.

Figures:

A.—A typical plant with tubers.

B.—Flower and bud.

(Note the pollinium on the stigma, all the open flowers in the habitat presented this appearance.)

C.—Column from front from an unopened flower.

D.—Column from side.

E.—Column wing.

F.—Variation, upper margin at column from rear.

G.—Head of column from side, showing clasping position of wings.

H.—Clasping wings of column (front).

I.—Pollinium.

(For natural size of Figures A et B, see description.)

EXCURSION TO BENDIGO

A very successful excursion to Bendigo was held on Saturday and Sunday, October 4 and 5, attended by 22 members. Mr. Marc Cohn, a member resident in Bendigo, made all preliminary arrangements. On the Saturday afternoon the visitors were driven in private cars, kindly provided by Mr. Cohn and his friends, to the Spring Gully district, some five miles south of the town, where the wild-flowers were at their best. An outstanding feature of the country was a hillside covered with the pink flowers of *Boronia anemonifolia*, var. *dentigera*.

In the evening a meeting was held in the A.N.A. hall in View Street, at which a number of moving and still pictures dealing with various phases of natural history were shown by members of the party. About 100 persons attended and these were very warm in their praise for what the Club had done for their interest and education.

On the Sunday the visitors were conveyed to a portion of the Whipstick Scrub twenty miles north of the town. Here, also, the wild-flowers were very beautiful, many species being new to most of the party. A number of birds and their nests and eggs observed here were of special interest. Picnic lunch was taken by the roadside and a drive back to Bendigo in time to catch the evening train to Melbourne concluded a very pleasant outing. The wish was freely expressed that this should be an annual excursion.

Among the plants noticed were the following: *Eriostemon obovalis*; *E. gracilis*; *Phebalium obcordatum*; *Boronia anemonifolia*, var. *dentigera*; *Grevillea aquifolium*; *G. ilicifolia*, var. *lobata*; *G. alpina*, with flowers ranging from red to pink and greenish yellow; *Prostanthera aspalathoides*; *P. microphylla*; *Loudonia Behrii*; *Calythrix Sullivani*; *Dampiera lanceolata*; *Micromyrtus ciliatus*; *Baerkea ramosissima*; *Pultenea largiflorens*; *Dodonea viscosa*; *Correa rubra*; *Acacia vomeriformis*; *Ac. obliqua*; *Ac. hakeoides*; *Pterostylis cynocephala*; *Thelymitra aristata*; *Th. antennifera*; *Glossodia major*; *Melaleuca Wilsonii*; *M. gibbosa*; *M. uncinata*; *Eucalyptus viridis*.

Among the birds noticed were: Yellow-tufted Honeyeater (*Meliphaga melanops*), Tawny-crowned Honeyeater (*Gliciphila melanops*), Regent Honeyeater (*Zanthomiza phrygia*), Purple-gaped Honeyeater (*Meliphaga cratitia*), Rufous Song-lark (*Cinchorhamphus mathewsi*), Owllet Nightjar (*Aegotheles cristata*).—L.W.C.

BIRDS OF CROAJINGOLONG

By N. A. WAKEFIELD, Genoa, Victoria

The naturalist who travels through Orbost on the Princes Highway carries away a very vivid picture of the distant "east of the Snowy," as a fascinating country of densely forested mountains, with only a few isolated clearings on the flats at Orbost, Cann, Genoa, and a few of the larger creeks.

In the coastal area and in the northern sub-alpine parts there are small natural clearings, and in the Bendoc district the southern extension of the Monaro Plains of New South Wales has been cleared for grazing, but otherwise practically the whole of Croajingolong is a virgin forest of an area of over three thousand square miles.

About a hundred species of the local birds can be dismissed without mention, for they would be well-known as common to the mountainous regions of Victoria, or to the coast or the inland waterways of the State. But otherwise the extreme east is profoundly interesting, and provides a remarkable contrast with other parts of Victoria.

Very few of Victoria's plain-loving birds have made themselves homes here, but the White-backed Magpie, Australian Pipit and Little Falcon are common in open places; Brown Quail, Stubble-Quail and the Rufous Song-lark have settled down on the river flats; and the White-fronted Chat is quite plentiful about Orbost. The Spur-winged Plover is common, but the Banded Plover has been seen only once, when a small flock visited Combienbar for a few days in 1938. In the sub-alpine plains about Bendoc the Southern Stone Curlew and the Straw-necked Ibis are often plentiful, but they rarely visit the lower river flats; and the same applies to the Australian Crow, while the Australian Raven is common throughout.

The White-winged Triller and Restless Flycatcher are rarities, but have both been seen at Genoa. The Mistletoe-Bird was only once noted, in an orchard at Orbost. The Noisy Friar-Bird and Rainbow-Bird are very uncommon in the district, but farther west, in the drier and more open forests of the Suggan Buggan River Valley, they are both rather plentiful and the latter nests in fair numbers each summer.

Of the introduced birds, the House-Sparrow, Starling and Goldfinch are plentiful, but the Blackbird is still rare and the Song-Thrush, Skylark and Common Myna have not yet appeared.

So it is seen that many of Victoria's common birds are our rarities here, and the converse is equally true. Red-browed Firetails may often be seen virtually in clouds, and their nests in dozens, in the lowland parts, while the Diamond Firetail is comparatively

uncommon. The Azure Kingfisher is plentiful along rivers and inlets, but the Sacred Kingfisher is much less in evidence.

The Peaceful Dove is common by roadsides and riverbanks, and Wonga Pigeons are frequently met with, for there is an abundance of their food—black nightshade berries in cultivated places, Acacia seeds throughout the forest undergrowth, and berries of various “jungle” creepers in the dense brushes. The Common Bronzewing is not so plentiful, and the Brush Bronzewing has been seen only near Mallacoota, in the coastal scrub. About Genoa and the Wingan River, the beautiful little Green-winged Pigeon is occasionally seen, but it is hard to observe, being shy and quickly hiding away in the dense brush.

The Spotted Quail-Thrush is frequently seen where the forest floor is less scrubby, and the Eastern Shrike-Tit is often noted as it cracks the “candle-bark” of the gum-eucalypts with its strong beak while seeking for insect larvae and spiders. The Bell-Miner is particularly abundant in dense tea-tree and eucalypt forest, generally near water, but often away from it. Its beautifully-woven, lace-like nest is frequently found, neatly hung from a few twigs, generally in bracken, and any intruder is immediately surrounded by a flock of angry birds whose chorus of harsh cries contrasts strangely with their usual elfin tinkle.

The Pied Currawong often descends upon a town or settlement in unbelievable numbers—particularly in rainy weather—and proceeds to devour everything eatable—apples, figs, grapes, tomatoes, household scraps, and even soap; then, when it decides to return to its forest fastnesses, flocks of the birds may be seen passing over high in the air, with their flopping, ungainly flight, for hours at a time. The Grey Currawong is rather uncommon and generally keeps to the forest. The Satin Bower-bird, too, sometimes appears in flocks in orchards, but it is generally content with its natural diet of forest fruits. Its beautifully-built playgrounds have been found at Jones Creek, near Orbost.

The Yellow-tailed Black Cockatoo is plentiful in the mountain forests, and if rough weather threatens it will forsake its diet of wood-borers and wattle-grubs to come down to the coastal forests and join its Red-tailed relative in a repast of banksia and sheoke seeds. The White Cockatoo is only a rare occasional visitor. Our commonest cockatoo is the Gang-gang, which generally betrays its presence by dropping “gum-nuts” as it feeds in the tall eucalypts; but even then one may have trouble in seeing the birds, for their habits and colouring are an excellent example of camouflage. Their blue-grey bodies and the red head and crest of the males blend with the leaves and blossoms, and the birds either remain perfectly still or move about very slowly as the

leaves wave in the breeze, and the low call of the feeding birds is identical with the creaking of the limbs of the trees.

The Superb Lyre-bird is abundant almost everywhere. Many nests have been seen in the scrub along the creeks about Orbost, Combienbar and Genoa, often several in use in the one locality, and there is hardly a gully or scrubby hillside that does not show the scratches and dancing mounds of the birds. One nest was found on a ledge of granite rock almost at the top of Genoa Peak, and the large-sized youngster in occupation provided an interesting exception to the rule, by simply refusing to utter the usual ear-splitting screech when the nest was investigated; nor could it be induced to, either then or when the nest was again visited a little later. Excellent concerts have been heard, with the Lyre-birds mimicking most of the well-known bird-calls with the notable exception of the magpies's;* but, because of the lack of saw-mills in the bush here, it has not learned the sound of axe and saw. Bushmen report that the Lyre-bird was even more abundant before the advent of the fox; and they tell of an albino near Combienbar and a chestnut-coloured one in one of the heads of the Delegate River.

From Combienbar there is a bridle track that winds its way over the Coast Range to Bendoc, about twenty miles distant, and for about ten miles the pathway has been cut—or tunnelled, rather—through a dense jungle of silver wattle, waratah and blanket-leaf, which is verily the home of the Lyre-bird. If one cares to tackle this trail at sunrise one morning in May, he is amply rewarded for the discomforts of a ride through the cold mountain air and the wet undergrowth, for, when the sun begins to strike through the mists, its warmth is greeted by scores of Lyre-birds which call from every point of the compass, each apparently trying to outdo the others in volume and variety of calls, until the whole countryside is ringing with their chorus.

Such are the "rare" birds which are common to us in East Gippsland. Now for some notes on a few of Victoria's rarities which are found in this district. The Great Crested Grebe has been seen once at Orbost, the White-necked Heron several times at Genoa and Wingan River, and the Australian Darter frequents Mallacoota Inlet between Genoa and the coast. The Brown Bittern is found about swamps and the Little Bittern has been seen at Wingan River; and the beautiful White Egret lives about the lowland waterways. All of Victoria's common wild ducks are present in the district, and sportsmen report also the Whistling Tree-Duck, Plumed Tree-Duck and Pink-eared Duck, all three of which are rare; but the Chestnut-breasted Shelduck is fairly plentiful about Orbost.

* Lyre-birds in Sherbrooke Forest occasionally give fragments of the Magpie's song.—Ed.

The Emu frequents the more open forests, nesting about Bendoc and on the coastal flats; and long ago the Native Companion was well known at Orbost, but it has since disappeared from there, though one visited Genoa not many years ago. The numerous eagles and hawks of the district include the Osprey, along the coast and inlets, and the beautiful White Goshawk in the mountain valleys.

The White-throated Nightjar is sometimes seen just after dusk, and in January of 1939 one was flushed from its "nest" on a forest spur near Cann River. The single egg looked as if it would roll away if touched as it lay there on the bare ground. In the winter of 1938 a Spangled Drongo found its way into the Combienbar valley, only to perish in a snowstorm; and another has been seen there since. The rare and beautiful Pink Robin has been observed twice—at Combienbar in 1938 and at Double Creek, near Mallacoota, in 1940. Each time there was a single male bird flitting about after insects among the Kanookas above the water. In two instances the rabbit-trap provided interesting records. First, there was a pretty Painted Quail in rather heavily timbered country at Combienbar, and at Genoa the victim was a magnificent example of the Tasmanian Masked Owl. Unfortunately the former was killed, but the latter was released unscathed.

Those who have been beyond Marlo or south from Mallacoota will know the grass-tree plains, the only natural lowland clearings in the whole district, and in Victoria, peculiar to Croajingolong. There are tracts of flat country often several miles in extent, with a dense vegetation of spear grass-tree (*Xanthorrhoea hastilis*) alternating with low heathy scrub, but devoid of trees except for occasional low clumps of shrubby eucalypts. In the heaths the quaint Southern Emu-Wren is sometimes seen fleeing from clump to clump as its domain is invaded.

Most interesting, perhaps, is the Ground Parrot (*Pezoporus wallicus*), which is anything but rare on these little-known plains. As one walks knee-deep through the grass-tree, single birds will rise, fly a short way, then drop to the ground again, until a score or more have been seen in a mile walk. Furthermore, one is well repaid for standing quietly for a while and listening to the Ground Parrots, for they are superb whistlers. The seeds in this bird's habitat include those of dwarf sheoke, kangaroo-grass, cranberries, and of the grass-trees themselves. The latter are often found to have been eaten, but whether the Ground Parrots or native rats are responsible, it is hard to say.

Now, although this article may contain some useful notes, the writer cannot claim to be an authority in ornithology, and it is certain that a competent "bird-man" would bring to light many far more valuable facts about our birds in this little-known corner.

PLANT LIFE IN MALAYA

(Summary of a lecture by R. E. HOLTUM, Director, Botanic Gardens, Singapore, on Sept. 8, 1941.)

The climate of Malaya, especially in Singapore and the south, is very uniform. The mean rainfall is about 100 inches a year, with six inches as the average of the driest month; humidity is high throughout the year, with a mean of about 80%. The temperature range is from about 70° to 92° F., the usual minimum being about 74° and the maximum on any sunny day 89° or 90°. The longest day is only 12 minutes longer than the shortest.

There is thus no annual cycle of climatic change to make plants respond with an annual cycle of growth, flowering, fruiting and rest. Growth is always possible. Some plants flower and fruit continuously; some (such as many deciduous trees) carry on a cycle of their own which has no relation to the calendar and varies from tree to tree; some make new growth or flower in response to the relatively small climatic changes which occur, principally to spells of dry weather, which may be more or less prolonged.

The natural vegetation of the country is a high evergreen forest, the tallest trees being 150-200 feet, with others of lesser stature below them, grading down to shrubs, small palms and other plants on the forest floor. The number of tree species is very large, somewhere about 2500, and there are commonly 100 species of trees in an acre of forest. The shade cast by the various tiers of trees is dense, and at the forest floor conditions are very uniform, the temperature ranges only a few degrees and humidity always high. Besides trees, shrubs and palms, there are numerous large woody climbers, which ascend to the tops of the tallest trees, there producing their flowers in full exposure to the sun.

Various trees and palms were illustrated by slides. The Tembusu (*Fagraea fragrans*, Loganiaceae) exhibits the most conspicuous gregarious flowering seen in Singapore, apparently in response to the first week of dry weather following the wetter part of the year; the small astringent orange fruits which ripen more than three months after flowering are responsible for mass visits of large fruit-bats which are little seen at other times. Species of *Ficus* are numerous, many of the strangling variety; two examples were illustrated. A slide was shown of the fastest growing tree in Malaya, *Albizia falcata*, introduced from the Moluccas as a shade tree for other crops; individuals of this species may attain a height of 100 feet and a good spread of crown in 10 years. With this may be contrasted many trees that make new leaf growth only at long intervals, sometimes of more than a year.

Among palms illustrated was the Sealing-wax palm (*Crytostachys lakka*) with bright red leaf-sheaths, native of fresh-water

swamp forest in the Malayan lowlands; also another swamp palm (*Zalacca* sp.) with very spiny leaf-stalks, which often forms thickets.

The heavy and uniformly distributed rainfall makes conditions very suitable for epiphytic growth, and epiphytes of all kinds are common, some in the most exposed places, others in the shady depths of the forest, and especially on trees by forest streams. There are 700 species of native orchids and nearly 500 of ferns. Illustrations were shown of the large common species of stag's horn fern (*Platycerium coronarium*); the very curious *Dischidia Rafflesiana*, the hollow leaves of which protect its own roots from the sun and also serve as refuges for ants; and *Fagraea auriculata* which grows as a large epiphytic bush and has flowers 8 inches across.

At the conclusion a few slides were shown illustrating the mountain forests of Malaya, which are so widespread and still contain many species unknown to science. Especially in the north there are large areas of trackless forest unvisited by any botanist. A delightful feature of these mountain forests, which are of lesser stature than those of the lowlands, is the wealth of beautiful herbaceous plants, principally of the family Gesneraceae. Epiphytes are also extremely abundant.

Several orchids also were illustrated. The commonest species is *Dendrobium crumenatum*, which has an interesting gregarious flowering. This occurs in response to a sudden fall of about 10° in temperature, such as sometimes precedes a heavy storm; the sudden cooling stimulates flower-buds which have reached the necessary stage of development to begin new growth, and all are open on the ninth day following, the flowers lasting only a few hours. Other orchids are susceptible to the same kind of stimulus, but take a different number of days for the flowers to develop. The giant orchid *Grammatiphyllum speciosum*, probably the largest epiphyte in Malaya, also was shown, and the terrestrial orchids *Arundina* and *Bromheadia*.

Among the most remarkable orchids of Malaya are the large climbing species of *Arachnis* (commonly called Scorpion Orchids) and *Vanda*, which are commonly grown in gardens. These produce very long climbing stems, sprawling over bushes and small trees in open places, their aerial roots going down in the shade to the accumulation of dead leaves on the ground, flowers being produced only by branches in the full sun. A hybrid *Vanda* (Miss Joaquim) is exceptionally free flowering, and provides the commonest cut flower in Singapore at all times of the year. New hybrids in the genera *Arachnis* and *Vanda* give promise of producing further free-flowering garden plants of great value. Some of these were illustrated.

THE VICTORIAN HYMENOPHYLLS

By N. A. WAKEFIELD, Genoa, Victoria

In 1938, in the *Philippine Journal of Science* (Vol. 67, No. 1), Dr. Copeland published a revision of the World's Hymenophyllaceae, in which he allotted the species of the family to 33 genera in place of the two with which we are familiar.

In Victoria we have four genera and eight species, which may be determined from this key:

Involucre valvate (previously *Hymenophyllum*):

Fronde margin entire *Mecodium*

Stipes winged almost to base:

Fronde 9 in. or more long *M. dilatatum*

Fronde under 9 in. long *M. australe*

Stipes not winged:

Pinnate with simply lobed pinnae *M. rarum*

Bipinnate with digitate segments *M. flabellatum*

Fronde margin toothed *Hymenophyllum*

Pinnae unilateral, involucre entire *H. peltatum*

Pinnae bilateral, involucre irregular *H. cupressiforme*

Involucre tubular or obconic (previously *Trichomanes*):

Veins branched within frond segments *Polyphlebium venosum*

Veins undivided in ultimate segments *Macroglena caudata*

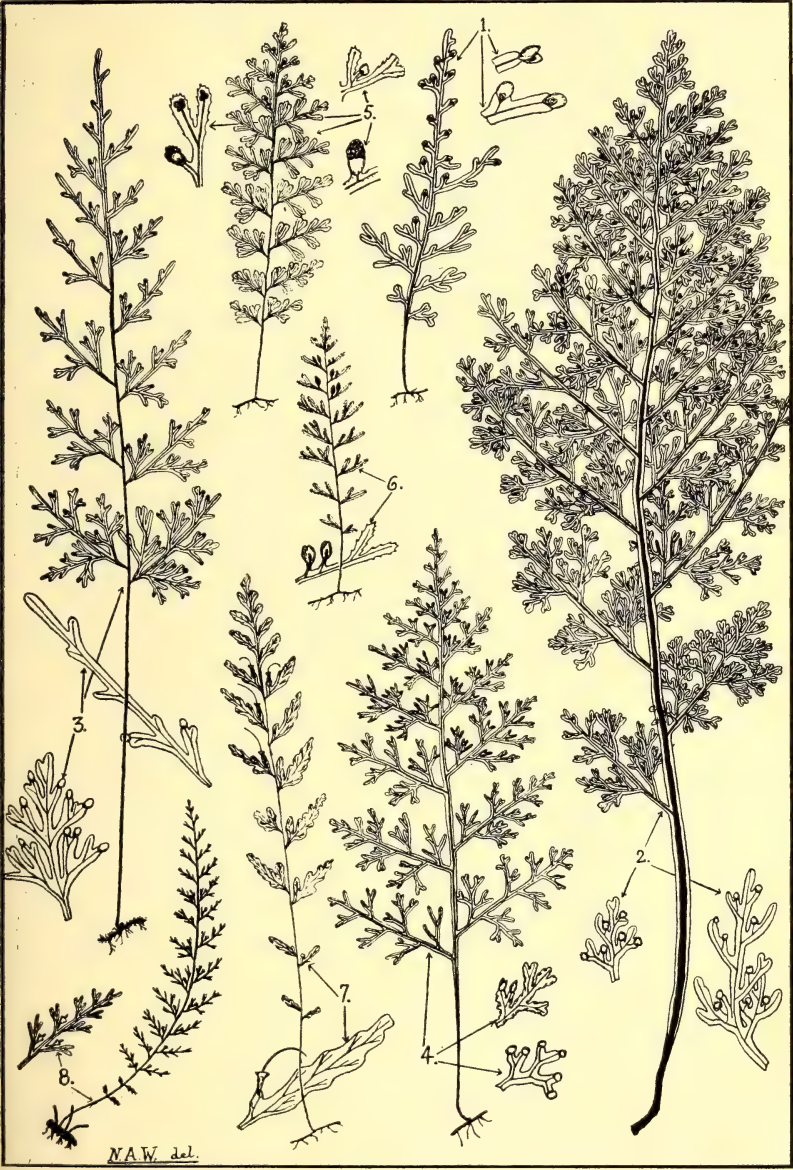
The generic descriptions and distributions, the revised names, the synonymy, and the distribution of each species in Victoria are given below.

Mecodium, Presl. Epiphytic; rhizome slender; fronds remote, medium or large, pinnately decompose; margins entire, bare; sori terminating frond segments; involucre valvate, receptacle enclosed. A pantropic and austral genus of about 100 species.

M. australe (Willd.) Copel. Plentiful as an epiphyte, generally on Soft Treefern, in moist mountain gullies from Otway Ranges to East Gippsland. Syn., *Hymenophyllum australe* Willd. Copeland lists this species for New Zealand (syn. *H. atrovirens*) and Tasmania, but only doubtfully for Victoria, while *M. javanicum* is given for Eastern Australia. However, all the Eastern Australian material available for examination undoubtedly belongs to the same species as that of Tasmania and New Zealand; hence the name *M. australe* is used here for our local species. The larger New Zealand species is *M. flexuosum*.

M. flabellatum (Lab.) Copel. On logs, trees and treeferns, and with the same range as the above species. Syn., *Hymenophyllum flabellatum* Lab.

M. rarum (R. Br.) Copel. On treeferns, trees and rocks from Otway Ranges to East Gippsland, but scattered and rare. Syn., *Hymenophyllum rarum* R.Br.



For Key see Page 110. (All the complete fronds are shown half natural size and the frond segments are about natural size).

M. dilatatum (Forst.) Copel. Recently discovered at Cumberland Gorge, near Marysville. (See *Vic. Nat.*, Vol. 52, p. 187.) Syn., *Hymenophyllum dilatatum* (Forst.) Sw.

Hymenophyllum, Smith. Rhizome creeping; fronds medium or small, pinnately dissect; margins serrate, bare; involucre deeply bivalvate; receptacle either enclosed or somewhat longer than the involucre; sporangia large, sessile. A genus mainly temperate of about 20 very similar species.

H. cupressiforme, Lab. Abundant on rock-faces, treeferns and trees throughout the mountain gullies of Victoria, and sometimes in mineshafts. The commoner Tasmanian form of this species, with comparatively long narrow fronds, is the typical plant and is rare in Victoria, while the short broad mainland form is common in this State but rare in Tasmania. The Australian material has previously been listed as *H. tunbridgensis*, which is a European and African species with smaller fronds and narrower segments.

H. peltatum (Poir.) Desv. An alpine species, known in Victoria only from near Mount Bogong. (See *Vic. Nat.*, Vol. 51, p. 241.)

Polyphlebium Copel. An isolated monotypic genus; the only plant in the family with very thin leaflets in which the veins branch freely in undivided segments of the fronds. Ranging from New Zealand and Tasmania to Queensland.

P. venosum (R. Br.) Copel. Epiphytic on trunks of treeferns from Otway Ranges to East Gippsland. Syn., *Trichomanes venosum* R. Br.

Macroglena Copel. Terrestrial or epiphytic; rhizome strong, elongate or short; stipes remote or clustered; fronds rather large, pinnately decompound; axes with narrow wings, or setiform, rigid; involucre obconic, not valvate, receptacle exserted. Ranging over the Old World tropics and to New Zealand and Madagascar.

M. caudata (Brack.) Copel. Not uncommon on trunks of Rough Treefern at Mount Drummer in East Gippsland, and recorded also from Gembrook. The latter record applies to the so-called "*Trichomanes humile*" of Victorian botanical literature, the plant being typical *M. caudata*, while Forster's species (*humile*) is not known to occur in Australia.

KEY TO ILLUSTRATIONS

Fig. 1.—*Mecodium rarum*. Frond and variations in sori.

Fig. 2.—*Mecodium dilatatum*. Frond and two secondary pinnae.

Fig. 3.—*Mecodium flabellatum*. Frond and variations in primary pinnae.

Fig. 4.—*Mecodium australe*. Frond and primary pinna; and pinna of the New Zealand *M. flexuosum* for comparison.

Fig. 5.—*Hymenophyllum cupressiforme*. Frond and fruiting habits; showing also the segment of a freak form which often has naked clusters of sporangia on the frond segments.

Fig. 6.—*Hymenophyllum peltatum*. Frond and primary pinna.

Fig. 7.—*Polyphlebium venosum*. Frond and primary pinna.

Fig. 8.—*Macroglena caudata*. Frond and primary pinna.

NEW MEMBERS

An unusually large number of nominations for membership of the F.N.C. was received at the last meeting, the number including no fewer than 13 country residents. These country nominations, which were secured by members who visited various towns recently, indicate that it is readily possible to obtain members in rural areas by the use of a little enterprise.

The various nominations are as follow:

AS ORDINARY MEMBERS.—Miss Margaret Paton, 27a Bryson Street, Canterbury; Miss Elizabeth Little, 16 Dryden Street, Canterbury (Proposed by Mrs. E. Coleman and Mr. W. H. Ingram). Miss A. Anderson, 69 Mundy Street, Mentone (Mr. V. H. Miller and Mr. F. S. Colliver). Mr. David Lewis, 77 Dendy Street, Brighton (Mr. H. P. Dickens and Mr. L. W. Cooper). Miss Dorothy Sarovitch, Whitehorse Road, Balwyn (Mr. Chas. French and Mr. F. S. Colliver). Mr. P. Bibby, National Herbarium, Melbourne (Mr. J. H. Willis and Mr. P. C. Morrison).

AS COUNTRY MEMBERS.—Miss G. Hillier, 60 Brougham Street, Bendigo (Proposed by Mr. H. S. Stirton and Mr. L. W. Cooper). Mr. J. H. Tubb, 11 Hallam Street, Bendigo (Mr. Marc Cohn and Mr. H. S. Stirton). Mr. Hugh Milne, Vine Street, Bendigo (Mr. Marc Cohn and Mr. H. S. Stirton). Mr. J. Ipson, Bendigo (Miss M. L. Wigan and Mr. H. S. Stirton). Mrs. D. B. Graham, Thorpdale (Mr. G. Auchterlonie and Mr. L. W. Cooper). Mr. E. E. Lord, Botanic Gardens, Horsham; Mr. H. Lindner, Vectis South; Mr. A. E. Linder, Vectis South; Mr. Arthur Hargreaves, View Point Street, Ararat; Mr. T. H. Fitch, Maude Street, Ararat; Mr. Leo Kelly, Jenkins Street, Ararat; Miss Betty Cuttle, Park Road, Maryborough; Mr. J. D. McKenzie, Cambridge Street, Maryborough (Mr. A. H. Chisholm and Mr. Ivo Hammet).

AS ASSOCIATE MEMBER.—Master Leslie Woolcock, 3 Spring Street, Fitzroy, N.6.

OBITUARY—MR. A. G. HAMILTON

The death, in his 90th year, of Mr. A. G. Hamilton, veteran botanist of N.S.W., is deeply regretted by his many friends throughout Australia.

Mr. Hamilton's work covered a wide field. An impressive list of his publications (*Proc. Linn. Soc. of N.S.W.*, and elsewhere) is evidence of his long and patient devotion, in field and laboratory, to natural history subjects. Mr. Hamilton was a pioneer in the study of pollination in Australia. Some of his papers on this subject were favourably commented upon by Charles Darwin. His Presidential address to the Linnean Society of N.S.W. (1916) dealt with pollination by birds, a subject on which little had hitherto been done.

Mr. Hamilton did much original work on other diverse subjects, such as "The Australian Pitcher Plant," "Flora of Mt. Wilson," "Xerophilous Characters of *Hakea dactyloides*," etc. He worked on one of his most valuable papers ("Xerophytic Structure of the Leaf in the Australian Proteaceae," 1927) with failing eyesight, yet no microscopical detail was sacrificed. His papers were illustrated with his own photographs and drawings.

In addition to his scientific work Mr. Hamilton contributed many charming articles to the Sydney *Quarterly Magazine* which were published in book form (*Bush Rambles*, 1937). These essays reveal him as a close observer and an ardent lover of nature. His writing, quiet, sincere and restrained, gives the impression of a rich store of knowledge behind the written word.

EDITH COLEMAN.

ARE YOU DOING YOUR PART?

In most societies devoted to popular natural history there is a tendency on the part of a majority of members to take merely a passive share in the proceedings and to leave active participation to others. This attitude is to be deprecated, and especially in societies which have the name of "Club." Obviously, such a title implies complete co-operation. It suggests that all members should take an active part, however modest, in the affairs of their association.

Members of the Field Naturalists' Club of Victoria attend meetings consistently. The attendance is rarely below 100. But of that number relatively few—not more than 20 per cent.—ever tender contributions, either to the meetings or to the Club's Journal. Thus the "clubby" nature of the society is weakened, and thus, too, an undue responsibility is placed on the willing workers. In general, the attitude of the "non-co-operators" appears to be that they have nothing of sufficient importance to communicate, and/or they haven't enough confidence to express themselves, either in speaking or writing. Both pleas are weak. If all naturalists adopted such an attitude in their apprentice days there would be no naturalists and no naturalists' clubs. Clearly, therefore, the members of the F.N.C. have an obligation, both to themselves and their colleagues, to subdue their excessive modesty and make some contribution, leaving to more experienced members the privilege of judging its value. It frequently happens, of course, that important observations are made by casual observers. In any event, you may be sure that any contribution will be received in the tolerant spirit of "Don't shoot the pianist: he is doing his best!"

The Committee of the F.N.C. does not want to see "picture nights" overdone. It is arranging that in future more meetings shall be devoted to general discussions on various Nature topics. Moreover, the hope is expressed that a greater number of members, both in city and country, will contribute short articles or paragraphs to the pages of *The Naturalist*. There are times when publication of the Journal is delayed through lack of sufficient varied material. This should certainly not be the case in a society of the size and standing of the Victorian Field Naturalists' Club.

 CONCERNING BRANCHES

The Committee of the F.N.C. has appointed a sub-committee to consider and report on the question of establishing branches of the Club in country districts. At present the rules provide only for affiliation by kindred bodies. The sub-committee is also to consider the question of establishing a junior section of the F.N.C., or, in the alternative, a number of junior branches in various suburbs.

Any suggestions on these subjects from members will be welcome.

 REPORT OF FLOWER SHOW, 1941

A wonderful display of native flowers was staged at the Victorian Horticultural Hall, Melbourne, on October 6. The Club owes thanks to a few enthusiastic members who supplied the choice blooms, also the Botanic Gardens, Burnley Gardens, and Maranoa Gardens for their generous help, and to the Victorian Horticultural Society for the loan of tables and bottles.

The show was officially opened by the President (Mr. P. C. Morrison), who was supported by two of the oldest members, Messrs. G. Coghill and Chas. French. The hall was filled with the choicest flowers grown mostly in private gardens, including N.S.W. waratahs and the new double Bendigo wax-flower.

The ladies are to be thanked for the arrangement of flowers. Money collected amounted to £6/19/6.

H. P. DICKINS.

Field Naturalists' Club of Victoria

OFFICE-BEARERS, 1941-42

President: Mr. P. CROSBIE MORRISON, M.Sc., 9 Maroona Road,
Brighton, S.5.
(Tel. X 3648.)

Vice-Presidents:

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Mr. H. P. DICKINS.

Hon. Editor, "The Victorian Naturalist":

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(Tel. UY 6551.)

Hon. Secretary:

Mr. F. S. COLLIVER, 14 McCarron Parade, Essendon, W.5.
(Tel. FU 6619.)

Hon. Assistant Secretary:

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South Yarra, S.E.1. (Tel.: Windsor 3189.)

Committee:

Messrs. A. S. Chalk, L. W. Cooper, Ivo C. Hammet, S. R. Mitchell,
H. C. E. Stewart, J. H. Willis.

EXCURSIONS

SATURDAY, NOVEMBER 15.—Eltham. Birds and Native Flora. Leader:
Mr. A. S. Chalk. Travel by 1.20 p.m. train from Princes Bridge Station.
Second class return fare, 2/-. Return trains leave Eltham, 5.8, 5.44,
and 6.40 p.m. (N.B.—Pound Bend trip abandoned on account of
transport difficulties).

SATURDAY, NOVEMBER 29.—Heathmont. Wild Flowers. Leader:
Mr. Noel Lothian.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 2/-.

VICTORIAN FUNGI, by J. H. Willis, a beautifully illustrated and highly informative account of the Mushrooms and Toadstools of the State. Price, 2/6.

A CENSUS OF VICTORIAN PLANTS, by the Plant-names Committee of the Club, contains the vernaculars of all our plants.

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DECEMBER, 1941



THE

Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, DECEMBER 8, 1941

1. Minutes.
2. Subject for the Evening: "Symposium on Albinism in Plants and Animals."
3. Correspondence and Reports.
4. Election of Members.
 - (a) AS ORDINARY MEMBERS.

	PROPOSER.	SECONDER.
Mrs. R. D. Lee, Flat 3, 18 Normanby Street, Middle Brighton.	Mr. P. Crosbie Morrison.	Mr. F. S. Colliver.
Mr. R. D. Lee, Flat 3, 18 Normanby Street, Middle Brighton.	Mr. P. Crosbie Morrison.	Mr. F. S. Colliver.
 - (b) AS COUNTRY MEMBERS.

Mr. James Collins, "Braeside," View Street, Healesville.	Mr. H. P. Dickins.	Mr. L. W. Cooper.
Mr. William White, Burns Street, Maryborough.	Mr. D. McKenzie.	Mr. A. H. Chisholm.
 - (c) AS ASSOCIATE MEMBER.

Mr. Graham Bickerton, 71 Durrant Street, Brighton, S.5.	Mr. J. H. Willis.	Mr. P. Crosbie Morrison
---	-------------------	-------------------------
5. Nominations for Membership.
6. General Business—
 - (a) Forthcoming Excursions.
 - (b) Questions by Members.
 - (c) Report on Plebiscite for Floral Emblem.
7. Remarks by Exhibitors.
8. Conversazione.

The Victorian Naturalist

Vol. LVIII.—No. 8 December 5, 1941

No. 696

PROCEEDINGS

The monthly meeting of the Club was held on Monday, November 10. The President, Mr. P. Crosbie Morrison, presided over about 100 members and their friends.

FLORA AND SETTLEMENT

Dr. R. T. Patton spoke on this subject, assisted by lantern slides. He emphasized the fact that prior to 1851 the type of vegetation, rather than the nature of the country, was the chief factor controlling settlement. After answering several questions, Dr. Patton was thanked by the President.

ELECTION OF MEMBERS

The following were elected as (a) Ordinary Members:—Miss Margaret Paton, Miss Elizabeth Little, Miss A. Anderson, Miss Dorothy Sarovitch, Mr. David Lewis, Mr. P. Bibby. (b) Country Members:—Miss G. Hillier, Miss Betty Cuttle, Mrs. D. B. Graham, Mr. J. H. Tubb, Mr. Hugh Milne, Mr. J. Ipson, Mr. E. Lord, Mr. A. E. Lindner, Mr. H. Lindner, Mr. Arthur Hargreaves, Mr. T. H. Fitch, Mr. Leo Kelly and Mr. Donald McKenzie. (c) Associate Member:—Master Leslie Woolcock.

GENERAL BUSINESS

Messrs. Ivo C. Hammett, T. S. Hart, and P. C. Morrison reported on their respective excursions, all of which were well attended.

After further discussion on the question of a floral emblem for Victoria, it was agreed, on the motion of Messrs. E. E. Pescott and A. D. Hardy, that a ballot should not be taken at the meeting but by post, in order to give all members, including those in the country, an opportunity of voting. The matter of how best to implement this decision was referred to the Committee.

A motion submitted by Mr. A. H. Chisholm (see elsewhere in this issue) protesting against the proposed slaughter of seals at Phillip Island, was carried unanimously, and the President and Mr. Chisholm were deputed to represent the Club at a deputation upon the matter to the Chief Secretary.

Mr. V. H. Miller reported that he had been informed that there was now only one Lyre-bird remaining in the National Park at Ferntree Gully.

EXHIBITS

Mr. E. E. Pescott: Collection of geological "eggs," including "Blue John" or Derbyshire fluor spar; Cornish Serpentine, or "Lizard's eggs;" alabaster from Egypt; European marble and an

egg-shaped basalt pounding-stone from an aboriginal midden at Glenorchy.

Mr. V. H. Miller: Aboriginal grinding-stone; also flowers of *Cymbidium Lowianum*, *Dendrobium densiflorum* and *D. nobile*.

Mr. T. S. Hart: Fruits of two species of mistletoe, *Loranthus Miquelii* and *Phrygilanthus eucalyptifolius*, and unripe fruits of *Hakea nodosa*, all of which were collected near Croydon.

Mr. R. G. Painter: Collection of cultivated native plants which included *Eucalyptus nutans*; *Grevillea lanigera*; *Dendrobium Kingianum* and *Brunonia australis*.

Mr. H. P. Dickins: Water-colour drawings of Australian wild-flowers.

CHOICE OF A FLORAL EMBLEM

Members of the Field Naturalists' Club are invited to vote on the question of a Floral Emblem for Victoria. The following plants have been nominated, and the claims of each one have been set out in an article by Mr. J. H. Willis in the September issue of the *Naturalist*:

Golden Wattle, *Acacia pycnantha*.

Common Heath, *Epacris impressa*.

Fairy Waxflower, *Eriostemon obovalis*.

Red Correa, *Correa rubra*.

Blue Pincushion, *Brunonia australis*.

Crimson Bottlebrush, *Callistemon citrinus*.

Purple Coral-pea, *Hardenbergia monophylla*.

Pinkeye, *Tethratheca ciliata*.

Members may select any other Victorian wildflower not included in the foregoing list. Place Nos. 1, 2, 3 only after your choice and send the names to the Hon. Secretary not later than December 31.

PICNIC TO RICKETT'S POINT

Representatives of almost every phylum of the animal kingdom were observed on the "shore picking" excursion and picnic to Rickett's Point on Cup Day (November 4). More than 40 members and friends attended, and the morning was occupied at low tide among the rock pools at Rickett's Point. The day was exceptionally calm, with the result that at the water's edge a line of foraminifera was plainly discernible on the sand. These were examined on the spot with portable microscopes. Sponges, sea anemones, planarian worms, polychaete worms (Annelida), many forms of crustacea, molluscs (including several cephalopods), solitary and colonial ascidians, starfishes, holothurians, and several small fishes were observed. The insect group was represented by moths, beetles, and ichneumon flies, which had apparently blown to sea and been drowned.

One noteworthy find was the comparatively fresh spine-covered test of a heart urchin of the *Echinocardium* type, almost identical with the fossil *Lovenia forbesii* which were observed in the cliffs at Beaumaris by a few of the party later in the afternoon.

After lunch Mr. A. J. Swaby kindly assisted, taking one group through the scrub to Beaumaris for botany while the remainder followed the leader, for part of the way at least, round the beach to the Beaumaris cliffs. Unfortunately the weather, which had been favourable earlier in the day, broke during the afternoon, and the excursion, as an excursion, slowly dissolved in the rain.—P.C.M.

TWO NEW VARIETIES OF ORCHIDS

By W. H. NICHOLLS, Melbourne

(1) *Pterostylis squamata*, R.Br., variety *valida*, n. var. *Planta robusta*, circa 14 cm. alta, omnino viridis. Flores magni similes *Pt. rufa*, R.Br. Sepala longa haud-adunca. Circiter 2 cm. longa.

A robust plant about 14 cm. high, wholly green. Flowers large, similar in general appearance to those of *Pt. rufa*, R.Br. Sepal points longer and not hooked inwards as in the typical form of *Pt. squamata*, R.Br., the points about 2 cm. long.

Habitat: Mt. Tarrengower, Maldon (Victoria). Collector: Mrs. J. von Bibra—23/10/1941.

Specimens received at the National Herbarium were found growing in small pockets of soil on a large granite boulder on Mrs. John Somer's property, Pigeon Hill, three miles from Maldon.

This sturdy form is figured by R. D. Fitzgerald in his monumental work "Australian Orchids" (Vol. 1, Pt. 6). It is, apparently, rarely met with, though probably it may have been mistaken, as my specimen was, for *Pt. rufa*, R.Br. (see figures).

(2) *Caladenia Patersonii*, R.Br., variety *hastata*, n. var. *Planta gracilis* circa 20-30 cm. alta. *Planta ac flores tanquam C. Patersonii*. Flores 1-3, albi vel lutei. Sepala ac. petala manifeste hastata. Labellum latum; calli fimbriæ ac laminæ clavati.

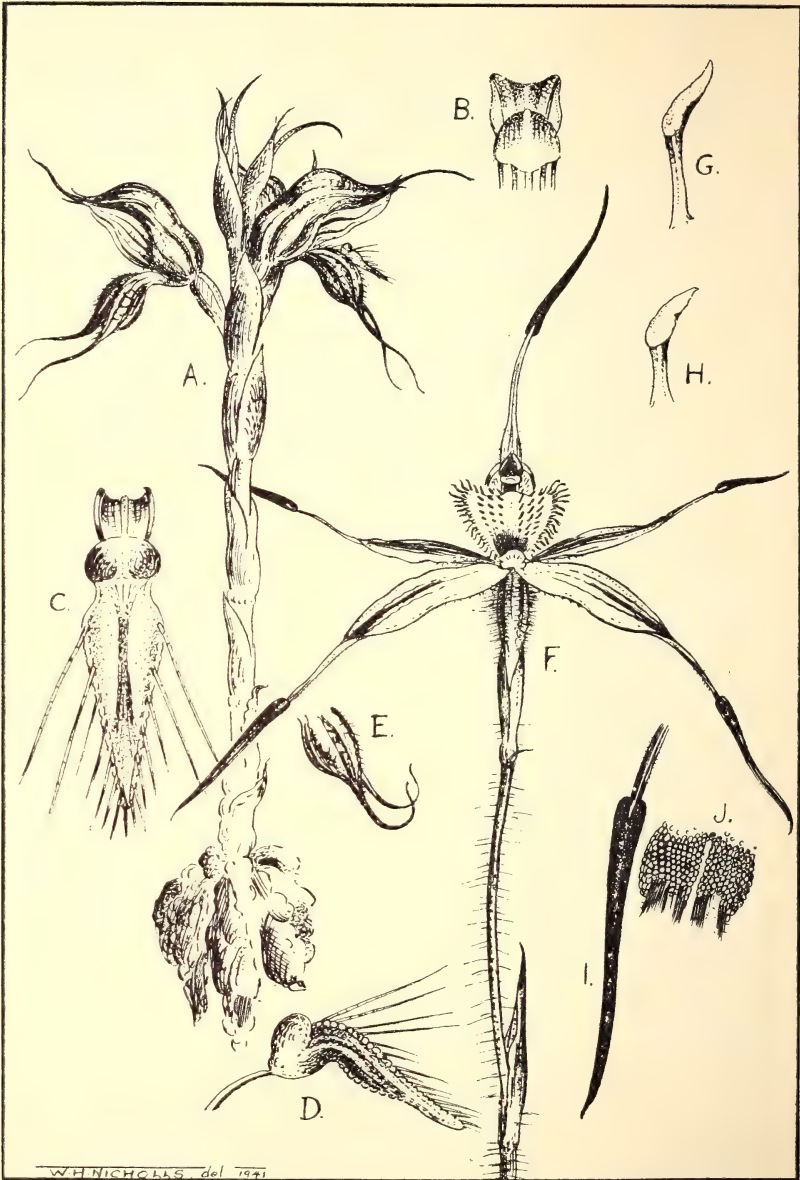
A slender plant 20-30 cm. high. Leaf linear or narrow-lanceolate, 10-12 cm. long. Flowers 1-3, white or yellow, with prominent purple markings*. Sepals about 4 cm. long, wide towards the base, narrowing to filiform points with prominent blackish glandular-hastate points, about 2-2.5 cm. long. Petals similar but shorter and narrower usually with hastate points. Sepals and petals with a broad purple longitudinal band along the under surface. Labellum rather wide (broad-ovate) white with purple markings; margins entire for a brief space near base, then adorned to the extreme apex with linear golf-stick-like calli; the calli of the lamina similar but longer in 4-6 rows chiefly on the broad part of lamina. Column similar to that in the typical form. The new variety is reported as fairly plentiful.

Habitat: Portland (Mrs. F. Mellblom). Flowering: October, November.

*Albino forms (palest yellow with the labellum white, the flower wholly devoid of markings) are known. (See figures.)

KEY TO ILLUSTRATION

A.—*Pt. squamata* R.Br. var. *valida* n. var. B.—Labellum from rear. C.—Labellum from above. D.—Labellum from side. E.—Hooked character of lateral sepal points—now known to be a feature of the typical form. F.—*Cal. Patersonii* R.Br. var. *hastata* n. var. G.—Calli from labellum marginal fringe. H.—Calli from labellum-lamina. I.—Hastate character of sepal and petal points. J.—Same in detail—showing packed sessile glands.



Pterostylis squamata, var. *valida*, and *Caladenia Patersonii*, var. *hastata*.
(For Key see page 115.)

"ON ACCOUNT OF THE SEASON"

By P. CROSBIE MORRISON, Melbourne

It has become a habit of naturalists generally, both professional and amateur, to account for abnormalities (or apparent abnormalities) of nature by blaming the weather, because there doesn't seem to be much else that we can blame. But that is, after all, a rather loose way of dealing with a difficult problem, or rather a series of difficult problems, and it would be most valuable to field natural history in general if we could get down deeper than the weather factor in elucidating some of the unusual occurrences which have been noted from time to time in the pages of the *Victorian Naturalist*.

Let it be understood at the outset that I am not throwing stones at anyone; I live in a glass house myself, and this line of thought has been developing as a result of many experiences of falling back on the same lame excuse for want of anything better. To take an example: has anyone any sound reason to advance to account for the terrific outbreak of mottled cup moth caterpillars which has blasted the gums over the whole of the countryside this spring? The cup moth, or Chinese junk, caterpillar is well known to school children all over the State, because of its power of stinging and producing a painful rash. It is one of those unusual caterpillars which lack pro-legs, and has a mode of progression which has interested many observers. It moves with equal facility over rough surfaces or over such a smooth surface as glass, and it doesn't seem to matter whether it is moving right way up or upside down—it leaves no trail of slime or sticky material.

The cocoon, too, has attracted some attention because of its smoothness and its symmetry—a perfect egg shape, under half an inch long, and produced with a lid which cracks off at the appropriate time as cleanly as though it had been cut with a razor.

Now this creature is moderately plentiful in normal times, feeding on gum-leaves. But there is always more food available than it can eat, so that shortage of food is not the limiting factor in its increase in numbers. The caterpillars are rejected, as far as I can discover, by all birds, without exception, so that a reduction in the number of birds would not account for the increase in number of cup moths. The caterpillar is frequently the host of a little Braconid wasp—I have a specimen now covered with the little white silk cocoons, like grains of cooked rice—but if a reduction in the number of Braconid wasps in the previous season is advanced, in theory, as the reason for the outbreak, we are merely pushing our inquiries only one stage further back; if there was a shortage of the wasps last year (and there seems

to be no recorded observation to support that supposition), what caused the shortage?

We have no data, so we say that "it must have been the abnormal season." But if that explanation holds at all, then every season must be abnormal for something or other, for scarcely a season passes without some creature or group of creatures, or it may be a plant, turning up in extraordinary numbers. Last year it was the little yellow butterfly, *Terias smilax*; some seasons ago it was the butterfly *Heteronympha morope*. In the bird world, we have this year an amazing number of small birds nesting, at least in the thickets within reach of the city. In the plant world, several observers have remarked on the wonderful season it has been for one of the most beautiful of our *Diuris* orchids, the lovely mauve *Diuris punctata*.

Doubtless these few notes will serve to recall to members many other similar irruptions—the sporadic casting up upon the shore of large numbers of paper nautilus shells, the irregular rise and decline of such pests as the brilliant cypress looper which is now ravaging the cypress hedges, and so on.

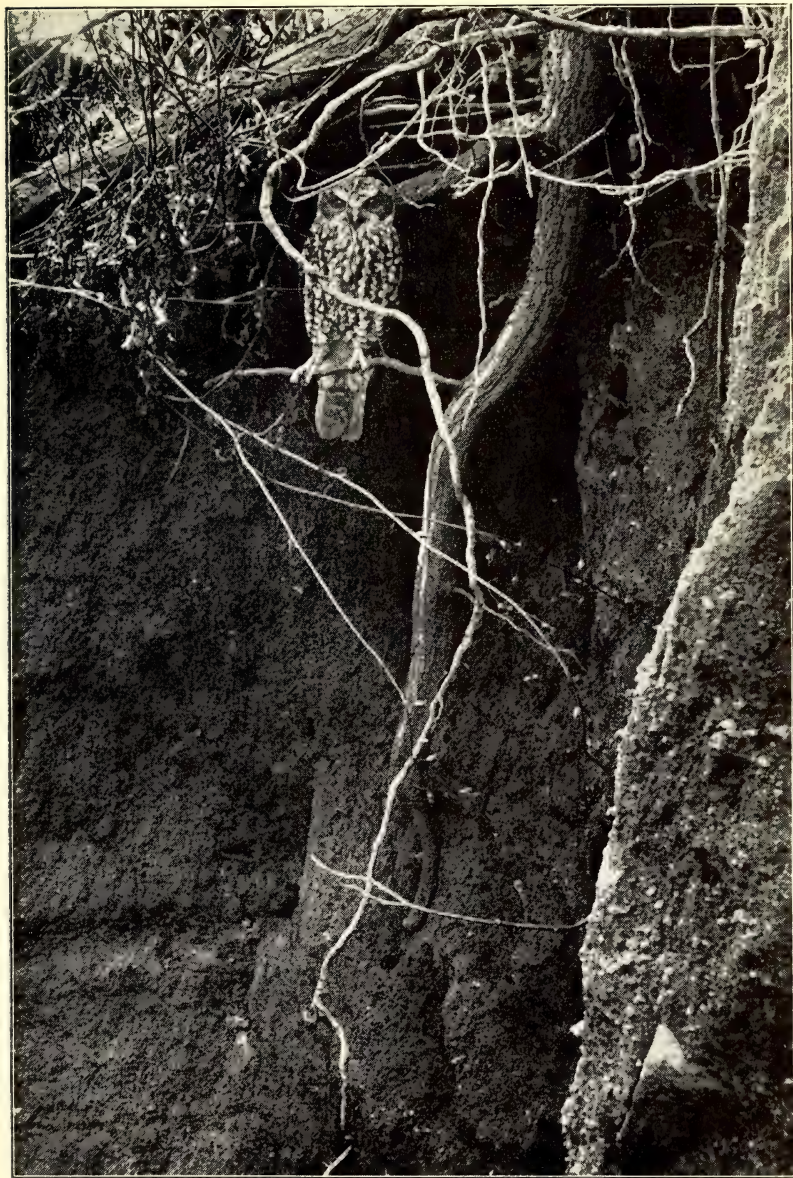
Can anyone honestly ascribe reasons, based on observation or correlation of such factors as rainfall, temperature, wind, sunshine, to account for these irruptions? What is more important, will anyone undertake to specialise in such correlations, or observations, so that we may discover more about the why and the wherefore of unexpected invasions of one kind or another? The problem is a heavy one, and it suggests some economic applications. The periodical outbreak of locust grasshoppers in plague proportions is merely one of the associated problems, and professional entomologists have been inquiring into that for some years without having found a really satisfactory solution; a solution, of course, would provide a starting point for the prediction of such visitations, and no one will deny the importance of that.

Finally, as a note, the trees which had been defoliated by the cup moth caterpillar are now beginning to put forth new leaves, which appear to be very healthy. Probably the visitation will not be permanently harmful; it may even do good by giving the trees a natural pruning.

HOW TO ROUT SLATERS

Responding to many requests for advice regarding the killing of slaters, which have been doing much damage among cactus, elkhorns, staghorns, maiden-hair ferns and other plants, Mr. Charles French offers the following suggestion:

Take a heaped tablespoon of calcium arsenate, three tablespoons of sugar, and two pounds of bran, mix to a moist but not sloppy degree with water and distribute among the plants. This mixture is death to slaters, and also to caterpillars, snails, etc.



This unusual photograph of a Boobook Owl was taken on an exposure of 40 seconds, at dusk, in a washaway at the You Yangs.

Photo. by W. H. Nicholls.

LAKESIDE WILDFOWL

By J. MOLLISON, South Yarra

Early in September Mr. George Hand, of the staff of the Melbourne Botanic Gardens, rowed me out on to the lake in search of nests of the Dusky Moor-hen and the Coot. As we pulled out of the boatshed, a brooding white-billed Coot squawked anxiously and jumped up and down on the water, like a monkey on a stick. We found its nest on a mound of earth, close to the shore of a small green island.

Although situated at water level, the nest was dry and cosy; it contained four speckled eggs. It was a fairly deep, saucer-shaped structure, consisting of dried reeds. We found several other nests, all containing eggs—one in the centre of a clump of lilies, another resting on a tussock of grass. These nests were all within an inch or two of the land, but one was observed to be "anchored" to the stems of water lilies, in deep water, about four feet from an island. The long stems were intertwined securely among the dried reeds of the nest; the structure floated perfectly. Owing to the similarity of the nests and eggs of the Coot and the Moor-hen, it is very difficult to tell one from the other unless the bird is actually seen on or near the nest.

Suddenly a Black Swan attacked us, and had to be pushed away with an oar. Accompanied by its mate, the angry bird kept pace with the boat until we were well away from the nest. In a pampas bush on one of the islands, we discovered a Black Duck's nest, lined with down. The nest, which was made of pampas leaves, was empty, and two addled eggs were lying on the ground nearby.

In the same bush, barely a foot above the duck's nest, was the nest of a bush rat. It, too, was made of pampas leaves, and in shape and general structure resembled the nest of a ringtail possum. After some hesitation I put my hand in the rat's nest, but there were no rodents within; doubtless they had heard our footsteps and made off. I believe that the parent ducks are usually well able to protect their young from the bush rats, which in such an inoffensive bird is rather surprising.

We heard the quick staccato whistle of a Dabchick and saw the sole Mountain Duck on the lake, paddling along vigorously. The recently introduced American Mallards are by far the most beautiful birds on the lake. The male has a splendid metallic-green head which glistens like satin in the sunlight, fawn wings, chestnut breast, black and white tail, and bright yellow bill and feet. The drake is about the size of a Mountain Duck but of more graceful build. The female is slightly smaller, and her plumage is a uniform speckled brown.

The American birds are breeding, although but a year has passed since they arrived. We saw nine young Mallards, about the size

of Coots, and presumably about six months old. Curiously, all were males. Their plumage, except for the green head, was dark brown. On our return, we saw a Swallow fly off a mud nest, under the boatshed roof, right over the water. I stood up in the boat, put my hand in the nest, and felt the soft bodies of baby Swallows. Mr. Hand told me that Swallows—possibly the same pair—have used the boatshed situation for ten successive years. Every summer, the young birds skim over the water on their flying lessons, but, so far as Mr. Hand is aware, none has ever fallen into the lake.

Perhaps the quaintest fledglings to be seen on the lake, are the baby Coots. They look like aquatic gollywogs, and their plaintive call resembles the meow of a kitten.

SHALL 1,000 SEALS BE SLAUGHTERED?

A few weeks ago the F.N.C. had occasion to congratulate the Government of Victoria on its refusal of approval for the killing of a large number of seals on Seal Rocks, near Phillip Island, which were claimed by fishermen to be causing damage to nets and otherwise affecting fishing. Since then, however, political influence has been brought to bear and the Government, through the Chief Secretary, has reversed its earlier decision.

Accordingly, the following motion was carried at the last meeting of the Club:

The Field Naturalists' Club of Victoria protests strongly against the declared intention of the Chief Secretary to cause the shooting of 1000 seals at Phillip Island. It points out that the evidence brought against the animals is frankly prejudiced, fails to prove its charge, and certainly would not be upheld in any court of law. It points out also that research has shown that seals feed on surface fish, which they obtain in the outer waters of Bass Strait, and it is only on rare occasions that any of them affect fishing in bays or inlets, such developments being covered by the power already given fishermen to kill seals in fishing grounds.

Further, the Field Naturalists' Club protests that wholesale shooting of seals in the breeding season, which is now at hand, would be a disgrace to the name of Victoria.

The matter in general has been the subject of a great deal of discussion in the newspapers. One report had it that there were as many as 100,000 seals at Seal Rocks and that they were causing a great deal of damage. The Chief Inspector of Fisheries and Game (Mr. Lewis) in scouting this estimate, placed the number at approximately 5,000. None of the men who wish to have the seals killed has given any definite evidence regarding the extent of the damage the animals are alleged to have caused, and it has become very evident that such questions should not be left to the decision of uninformed politicians.

It appeared on November 11 that the Minister was weakening in his attitude to the proposed slaughter, for he said then that he was

very doubtful, owing to the stringency of the precautions, whether the call for tenders would produce any satisfactory offer.

On November 14 it was announced that terms of the contract for the killing of 1,000 seals included one that both the preliminary deposit of £10 with the tender, and the later deposit of £40 may be forfeited if the destruction of the animals has not been completed satisfactorily in the opinion of the Chief Inspector of Fisheries and Game. The department believes (it was said) that this condition would ensure tenders only from men prepared to employ expert marksmen to do the killing and from men of some substance who will not regard the occasion as one for indiscriminate slaughter.

Another condition of the contract is that the seals must be killed by shooting between March 1 and May 31 next year; and other conditions are as follow :

No seal shall be killed in the water.

The carcasses and skins shall be the property of the successful tenderer, who may sell or otherwise dispose of the skins and any parts of the carcasses having a commercial value.

The carcasses shall be skinned and treated on the Seal Rocks or taken by boat to the mainland to be skinned and treated.

All residue of the carcasses shall be disposed of by burning.

The work of killing and the skinning and treatment of carcasses shall be carried out under the supervision of the Chief Inspector of Fisheries and Game, and the successful tenderer shall provide transport by boat for the Chief Inspector or his representative.

No royalty shall be payable in respect of the seals killed.

All skins shall be submitted to the Chief Inspector for branding before being sold.

On November 26, the President and Mr. Chisholm attended a deputation to the Chief Secretary to ask for the rescission of the decision to have the seals shot. Residents of Phillip Island and Sir James Barrett were included in the deputation. The Minister's reply was to the effect that his decision must stand, as, in his view, much damage to fishermen's nets was done by seals. He doubted, however, if anyone would be found to shoot the animals under the rigid conditions imposed.

EXCURSION TO ELTHAM

Perfect weather conditions prevailed on November 15, when about 25 members and their friends attended the outing to Eltham. Some 35 species of birds were met with. Nests containing eggs and/or young of the following species were examined:—Regent Honeyeater, Rufous Whistler, Yellow Robin, Yellow-faced Honeyeater, Orange-winged Sitella, Red-browed Finch, White-browed Wood-Swallow, Brown Thornbill, and Blackbird. Birdland greeted us with an atmosphere full of song, the Rufous Song-Lark, White-winged Triller, and Rufous Whistler being, perhaps, the dominating voices.

Once again the visitors were recipients of the gracious hospitality of Mr. and Mrs. W. C. Tonge, and her sister, Mrs. Stafford. The leader thanked the hosts, on behalf of those present, for their kindness.

A.S.C.

A RARE SEA-WEED

By H. C. E. STEWART, Melbourne

Among the many treasures in the National Herbarium, Melbourne, is a portfolio of sea-weeds, collected by Ronald Campbell Gunn, the eminent botanist of Tasmania. Those interested in phycology, nowadays a somewhat neglected branch of natural history, will find an especial delight to inspect this superb collection of *Algae Tasmanicae*. The specimens, mostly found in Bass Strait, are beautifully mounted and classified with meticulous care. Although collected in the early forties of last century, all the species in the volume are in a perfect state of preservation.

Pride of place is given to the rare *Claudia elegans*, belonging to the family *Rhodomeleae* from the extensive order *Rhodospermae* of marine vegetation. Of a rich ruby-red colour and found only in Bass Strait, the fronds of the plant floating in water resemble ostrich plumes. The accompanying photograph, reproduced by permission of the Director of Botanic Gardens and National Herbarium, shows the delicate tracery of the venation in this lovely sea-weed. The species can also be seen in the Bracebridge Wilson collection.

It will be recalled that R. C. Gunn, F.R.S., F.L.S. (1808-1881), performed notable service in discovering and naming many forms of land and marine vegetation on both sides of Bass Strait. He reached Tasmania in 1829, and during a busy life as a botanist, he was a police magistrate and superintendent of convicts in North Tasmania. Later he became private secretary to Sir John Franklin, and for a time was a member of the Tasmanian Parliament. In his *Records of Tasmanian Botanists*, J. H. Maiden alludes to Gunn's magnificent contribution to Australian botanical science. William Henry Harvey, the distinguished algologist, who himself visited Australia, dedicated the 5th volume of his *Phycologia Australica* to R. C. Gunn, and mentions his collections of Australian algae, which were the earliest made. To quote Harvey: "Many new species are of Gunn's discovery and to him is also due the re-discovery of *Claudia elegans*."

The volume of Gunn's collection at the National Herbarium is therefore of historical as well as botanical interest.

PERSONAL

Mr. Charles French, former Government Biologist and one of the oldest members of the F.N.C., has been appointed to the Committee of Maranoa Gardens, Balwyn, and also to the Committee of Booroondara Park, East Camberwell. It is gratifying to learn that Mr. French hopes to induce the Camberwell Council to plant native flora in this park. Maranoa Gardens, of course, already has one of the finest collections of native trees and shrubs to be found in Australia.

PLATE XXII



Claudia elegans: preserved specimen in the National Herbarium,
Melbourne.

Photo.: H. T. Reeves.

EXPLORATION, VEGETATION AND SETTLEMENT

(Summary of Address by Dr. R. T. Patton, delivered to the F.N.C. on November 10, 1941)

As the origin of our State fades into the past, so there increases the belief that destruction of the forests was necessary for the purposes of settlement, and therefore it is of great interest to learn what early visitors to the future State had to say about this new land.

Matthew Flinders is the first to give clear expression to the natural condition of the vegetation and to forecast the future. On his way to Station Peak in 1802 he passed over a low plain "almost destitute of wood" and covered with a "small bladed grass," which we now know as Wallaby Grass. From the peak he observed that for over thirty miles the grassy plain extended to the north, and that it was only lightly timbered. His conclusion was that his new land was "a grassy country capable of supporting much cattle, though better calculated for sheep." This last statement did not see its fulfilment for several decades.

The next important visitors to recognize the great value of the country were Hume and Hovell in 1824. They crossed the Murray to the east of Albury and crossed the Mitta Mitta, Kiewa, Ovens and King Rivers. To the east they observed the high mountains of the Alps and the low grassy lands to the west. After passing through hilly country they arrived at the Goulburn and noticed that the hills in its vicinity were well grassed and thinly wooded. After crossing the Yea River they remarked that "a finer country for sheep cannot exist." Soon afterwards they found themselves in serious difficulties, on Mount Disappointment, with the tall dense forest of mountain ash, which, they declared, "infinitely surpasses all." Retreating northwards and then proceeding westwards through "a good sheep pasturage," they reached Broadford and then turned south to pass through twenty miles of open plain on which there was scarcely a tree. They finally reached Corio Bay, and their summing-up of the country was that it was a "fine dry sheep pasturage," but there was "a deficiency of trees fit for building."

From their glowing account little resulted and the rich pastoral areas remained unoccupied. While settlement was in its infancy around Port Phillip, Major Mitchell crossed the Murray and proceeded along its southern side to near Cohuna and then turned southwards to Pyramid Hill. Aroused by the magnificent view of the beautiful grassy country to be seen from this peak, Mitchell prophesied that "our steps would soon be followed by the men and the animals for which it seemed to have been prepared." Nor did he forget the possibilities of irrigation, for

it was a country where canals would serve "for the better distribution of water over a fertile country."

South of St. Arnaud he passed through the still existing box-ironbark forest, and after this he discovered a land "destined to become eventually a portion of a great empire." Not being encumbered by too much wood, "it was ready for the reception of civilized man."

While still in the Wimmera, Mitchell speaks of "grassy undulating plains, with clumps of *Casuarinae* and box trees." After ascending Mt. Arapiles, his journey was generally south, and he at length came to the Glenelg. To the west he saw beautiful grassy country which ended after he passed the Wannon. After this and until he emerged near Mt. Eckerley Mitchell was in a mixture of stringybark forest, which is mostly there to-day, swamp and heath.

The Portland area was the only continuous forest that Mitchell passed through. Up to reaching it and after leaving it he travelled mostly in grassland or lightly timbered country. From Mt. Eckerley he proceeded to Mt. Abrupt, from the summit of which he saw a vast extent of open downs. Mitchell had thus worked from north to south around the west of the Grampians. As he proceeded north-west he declared that "a land more favourable for colonization could not be found. Flocks might be turned upon its hills or the plough at once set to work." Mt. Cole, he found, was crowned with lofty timber, and there to-day one may see the finest messmate trees in the State. After leaving Mt. Cole he again encountered ironbark, and these areas of forest still exist.

From Mt. Cole to Castlemaine Mitchell passed what he regarded as an "Eden." In his ride to Mt. Macedon, he again went into raptures about this new land, for he found "open level country of the finest description." On the mount his observations were interfered with by the lofty blackbutt (*E. gigantea*) and blue gum (our snow gum, *E. pauciflora*). Both these species are still plentiful on the top of the mount. Returning north to near Castlemaine, he travelled roughly north-west to the Goulburn River, and noted that the forest was so open that he could see "each way for several miles." This use of the word "forest" is of interest, for at other times he uses it in the same sense as we use it to-day.

In summing up the results of his observations Mitchell says that hills of moderate elevation occupied the central country which was thinly or partially wooded and the lower country on either side of the hilly region was chiefly open. This description would fit to-day after a century of occupation.

While Mitchell explored the future Victoria, a steady stream of settlers had already set in at Port Phillip, and a minor one at Portland. Immediately afterwards another set in from the north along Mitchell's track. Grassland was the quest and there appeared

to be plenty for all. Mitchell had truly prophesied that the "reign of solitude" was near its close.

A fourth stream of settlement had also set in from the Monaro country into the mountainous forest country of the east and settlement had begun around Lake Omeo. Active exploration was carried on by Angus McMillan and Count Strzelecki. The former's journey to the Buchan area and then "over a very broken country to Omeo" was a masterpiece. His later description of his journey to the plains in the south is in striking contrast to the warm praise of other explorers. Strzelecki followed for a considerable distance in McMillan's tracks, and from him we learn there was but little grassland and that the whole region was "almost inaccessible." Few roads traverse these areas even to-day.

Passing over these beautiful plains, which extend eastward from Traralgon, Strzelecki steered for Western Port and entered the South Gippsland hill country. His experience was similar to that of Hume and Hovell, for he says that the country was almost impenetrable, "interwoven with grasses and encumbered with gigantic trees fallen and scattered in confusion." The grass was undoubtedly the common wire grass of the mountain ash forests. This forest has been wiped out, but not in the early days of settlement. Very little grassland occurred in this mountainous portion of the State, and it is of interest to learn what Strzelecki thought of the High Plains. At an elevation of 5,200 ft. he found the pasture to be as rich as that on the lowland plains.

Mitchell had worked around the Mallee, but Eyre in 1838 attempted to get through it to Adelaide. He discovered Lake Hindmarsh, but after three weeks of search he found neither water nor grass, but "only a country very thickly covered with scrub."

The year 1851 may be said to have seen the last of active exploration; but it also saw the discovery of gold, which sounded the deathknell of the peaceful pastoral development of the extensive grasslands. Up to 1851 the search was for grass and it was the open country that dominated settlement.

EXCURSION TO CROYDON

With an attendance of nearly 30, on October 25, a route was taken to some wooded paddocks south-west of the town, available by the kind permission of the owners. A short length of the railway reserves also was looked over.

Among the more interesting plants were a clear yellow form of the common flat-pea (*Platylobium obtusangulum*), a white variety of the pink *Bredemeyera ericinum*, and several orchids, especially *Thelymitra*, few of which, however, were fully open; *T. flexuosa* was perhaps the most numerous. Seedlings of *Acacia terminalis* were abundant at one place and occur scattered in the woodland. *Acacia Baileyana* is also found self-sown, and seedlings of *Pittosporum* (*P. undulatum*) are quite abundant in the district, as well as a garden honeysuckle.

T. S. HART.

REMARKS ON *CALADENIA CLAVIGERA*

By W. H. NICHOLLS, Melbourne

Allan Cunningham's description of *Caladenia clavigera*, the "Clubbed Spider-Orchid," appears (in Latin) in Lindley's *Genera and Species of Orchids*.¹ Bentham's² and Rodway's³ descriptions of this *Caladenia* are in full agreement, and faithfully detail the plant rightly presented as Cunningham's *C. clavigera* in Hooker's (fil.) *Flora Tasmanica*,⁴ which plant (in 1920) was represented as a new Victorian *Caladenia*, viz., *C. cordiformis*, Rogers.⁵ (Prior to this time, this particular "Spider" had been accepted in Victoria, and elsewhere, as *C. Cairnsiana*, F. Muell., an endemic West Australian species.)

Rogers, in his description of *C. cordiformis* (see p. 331),⁵ says: "In all the specimens (about a dozen) examined, there was no evidence of clubbing of the sepal points." In the present writer's experience with this *Caladenia* the sepal points are invariably clavate; sometimes the petal points are likewise adorned.

That a mistake has occurred in respect of this *Caladenia* is apparent by a perusal of the descriptions (quoted above) and the examination of Gunn's figure as represented by Hooker's plate,⁴ a figure referred to by Bentham as representing *C. clavigera*, and, in addition, Bentham's material in the National Herbarium, Melbourne (labelled "*C. clavigera*, Gunn"), from the following habitats: "VICTORIA—Ballarat (Glendinning), Maldon (Mrs. Nott); TASMANIA—Circular Head (Gunn), Tamar River (Archer), Flinders Island (Milligan)."² This material, accepted as *C. clavigera* by the botanists of that time, is in a splendid state of preservation.

Surely the facts here stated furnish conclusive proof that this is another instance of incorrect diagnosis arising from various factors. Paucity of New South Wales material; Fitzgerald's interpretation of *C. clavigera* (*vide Aust. Orchids*⁶); and the variable nature of *C. clavigera* must be taken into account. (The flowers vary much in size and the labella-segment is variously hued, ranging from a light biscuit tone, pale yellow to emerald green, with the usual brown markings; the variability of the segment points must also be considered here.)

Cunningham's type specimen (or specimens?) is not available to Australian workers, and "Woolfs' Yass flower in the National Herbarium at Sydney is the only N.S.W. specimen of *C. clavigera*, Cunn., at present available in Australia."

Fitzgerald's interpretation (referred to above) had been accepted as representing *C. clavigera*, Cunn., despite Fitzgerald's own doubts, for he records: "This form does not agree at all well with Hooker's plate in *Fl. Tasm.*"

Rev. H. M. Rupp, of Northbridge, the New South Wales

orchidologist, in a recent letter says: "Fitzgerald was hardly right in saying that Cunningham's record was from 'near Bathurst.' It was from the Vale of Clwydd in the Blue Mountains, i.e., the modern *Lithgow*. The sandstone flora of the Blue Mountains is very different from that of the open pasture-land plains of the Bathurst tableland, 50 miles to the west."

The form which has long passed as Cunningham's *C. clavigera* is now well-proven to be (owing to the investigations of Norman A. Wakefield, of Orbest (E. Vic.), and myself) a variant form of the typical *C. reticulata*, Fitz., a widely distributed *Caladenia* now known to possess definite polymorphic characteristics.

REFERENCES

1. P. 422.
2. *Fl. Aust'ris*, vol. VI, p. 382.
3. *Tas. Flora*, p. 204.
4. Vol. ii, p. 28, tab. 222A.
5. *Trans. Roy. Soc., S. Aust.*, p. 330.
6. *Aust. Orch.*, vol. 1, part 2.

ABORIGINAL CARVINGS

A booklet that will interest all naturalists, and general readers as well, is *Burial Trees*, which Robertson and Mullens (Melbourne) have published for Mr. Lindsay Black, of Leeton. It is the first of a proposed series on the aboriginal customs of the Darling Valley and Central New South Wales.

The chief feature of the booklet is a score or more of excellent photographs of carved trees. The descriptive matter, too, is very interesting. Mr. Black explains the marks of steel axes on some of the carvings by stating that they were cleaned up and kept in order by the natives after the coming of the white man. By far the greater number of the graves carry only one glyph, but the number varies up to five in odd cases. It is curious that this custom of making taphoglyphs was peculiar to the Kamilaroi and Wiradjuri nations. Northward of their region lies the area of ceremonial trees (at bora grounds) and to westward is the region of the cylindo-conical stones and widows' caps.

Year by year the dendroglyphs of New South Wales are vanishing. Clearly, therefore, Mr. Black has done a national service in preserving and publishing photographs of these remnants of an ancient culture.

The booklet carries an Introduction by Mr. A. S. Kenyon, who suggests that Australians should strain every nerve to take full advantage of the opportunity to study a race that is probably the nearest approach to primitive man. Mr. Kenyon expresses the hope that Mr. Black will be able to draw further on the lore he has acquired from his vast store of stone implements of interior N.S.W.

SEASONAL BIRD NOTES

It is years since the Yellow-billed Spoonbill (*Platalea flavipes*) has occurred in such numbers near Melbourne as it has during the present season. The bountiful rains which have fallen intermittently since July have promoted an extraordinary growth of vegetation and as a result many species from northern Victoria have appeared on the outskirts of the suburbs. The Spoonbills have been noted in small flocks at waterholes around Burwood and other parts close to the city. They are rather timid and not easily approached. When in flight they travel fast, with their necks outstretched. Both the spoon-like bill and the legs are yellow, though, through wading in murky water, their legs often have a blackish appearance similar to the legs of the Royal Spoonbill. It is rather remarkable that such numbers of these birds are in evidence when they should be rearing broods in the big red gums along the Murray River. Possibly they may also breed in some of the large red gums on the back waters of the Eildon Weir, where a number of birds were seen recently.

The Straw-necked Ibis (*Threskiornis spinicollis*) is another bird that has appeared in greater numbers than in other years, but the White Ibis (*Threskiornis molucca*) continues to be rare down here and usually only solitary specimens are seen feeding along the edges of lagoons. The conspicuous White-necked Heron, though fairly plentiful, is rarely seen in groups exceeding three or four in number.

Both the Rufous and the Black-breasted Song-Larks have appeared in large numbers on the edge of the suburbs. With such a prolific growth of grass it has been a very favourable season for these birds. Nevertheless, although they must have nested very freely, it is quite an event to locate a nest of either species. As soon as the breeding season is finished, these birds cease to sing and they appear to disappear from Burwood early in the summer months. It is mainly due to their ringing songs that their presence is noticed.

Large flocks of White-browed Wood-Swallows, with a few Masked Wood-Swallows, were seen on many occasions passing overhead. A few of the flocks were making their way in a southerly direction, but it was noticed on days when a warm north wind prevailed that the birds were flying against the wind and making their way north. Occasionally the birds would settle in short bushes to rest, but, with the exception of a few pairs, they all continued on their way. Even when they settle down amongst the bushes they are seldom quiet, but will fly around from bush to bush. At times they were travelling so high that it was nearly impossible to see them, and their presence was indicated only by their sharp calls. When flying in such large flocks they must suffer severely from the depredations of the smaller species of birds of prey. They are erratic birds in their habits. After taking up their abode in certain patches of scrub they will, even though nesting operations have commenced, desert the spot on a change in the weather or perhaps through some other cause.—

D. DICKISON.

ABUNDANCE OF ORCHIDS

Members of the F.N.C. have greatly enjoyed recently the fine displays of certain species of orchids to be seen near Melbourne. This applies particularly to *Diuris punctata*, the Purple Double-tail. In certain areas—near Beaconsfield on the one hand and near Sunbury on the other hand—the flowers, ranging from light lilac to deep purple, have been remarkably abundant, thousands of blooms being seen in company. Botanists declare that they have never previously known this orchid to be so plentiful.

Field Naturalists' Club of Victoria

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EXCURSIONS

SATURDAY, DECEMBER 13.—North Kew Lagoons. Subject: Aquatic Insects and Pond Life generally. Travel by the Tramway bus "North Kew" running along Flinders and Russell Streets and alight at Willsmere Park. Alternatively travel by either the East Kew tram in Flinders Street or the Mont Albert tram in Collins Street and alight at Kew Junction, thence by the Fairfield bus to Grandview Terrace. Willsmere Park is only a few hundred yards further on. Meet here at 3 p.m.

JANUARY 3 to 10, 1942 (or alternatively January 5 to 12 inclusive).—Mount Buffalo National Park. Object: General. Accommodation at the Chalet for limited number—total inclusive cost for 8 days £7/15/-. Full particulars from Leader, Mr. H. Stewart.

SATURDAY, JANUARY 10 (instead of January 3 as previously announced).—Ferntree Gully. Subject: General. Leader: Mr. H. P. Dickins. Travel by the 1.38 p.m. train from Flinders Street, running express from Richmond to Box Hill. Fare, second return, 2/5.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 2/-.

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JANUARY 1942



THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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1942

Field Naturalists' Club of Victoria

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MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, JANUARY 12, 1942

1. Subject for the Evening—"Among Tall Trees." Illustrated Lecture by Mr. C. L. Lang.
2. Result of Plebiscite for Floral Emblem.
3. Correspondence and Reports.
4. Election of Members.

AS ORDINARY MEMBER	PROPOSER	SECONDER
Mr. Eyre Swarbreck, Peace Street, Highett.	Mr. P. Crosbie Morrison	Mr. L. W. Cooper
5. Nomination for Membership.
6. General Business—
 - (a) Forthcoming Excursions.
 - (b) Questions by Members.
7. Remarks by Exhibitors.
8. Conversazione.

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No. 697

PROCEEDINGS

The monthly meeting of the Club was held on Monday, December 8. The President, Mr. P. Crosbie Morrison, presided over about 75 members and their friends.

ALBINISM IN ANIMALS AND PLANTS

The Club's evening on albinism was a most interesting one.

The President opened the discussion by giving a short talk in which he outlined albinism and how it is inherited. Albinism in animals, he said, resulted from the entire lack of pigment of the skin which gave white-skinned and pink-eyed animals. Partial albinism is often mistaken for total albinism, but the two can be distinguished by the lack of pink eyes in the former. By carefully selecting true albino parents it is possible to breed pure lines of white animals, such as rabbits, rats and mice.

Dealing with albinism in man and animals, Mr. F. S. Colliver made mention of a white negro and also of a piebald race of Mexicans. Referring to the white protecting coat taken on by Arctic animals in the winter, he pointed out that this was due, not to the animal being a partial albino, but to the effect of the climate.

Albino plants, due to the lack of chlorophyll, said Mr. N. Lothian, are short-lived, for not only does the chlorophyll give the leaves their green colour, but without it plants are unable to manufacture their food. By crossing two variegated plants of the same species total albino seedlings are easily obtainable.

Many instances of partial and total albino animals were mentioned by Club members, and the following may be cited:—White satin bower-bird, lyre-bird, magpies, blackbirds, kookaburras, wrens, kangaroos, echidnas, stump-tailed and blue-tongued lizards. In plants, albino *Pittosporums*, *Veronicas*, *Araucaria*, and white-flowered orchids were amongst the examples given.

ELECTION OF MEMBERS

The following were elected as (a) Ordinary Members:—Mr. and Mrs. R. D. Lee; (b) Country Members:—Mr. James Collins and Mr. William White; (c) Associate Member:—Mr. Graham Bickerton.

MAR 20 1942

GENERAL BUSINESS

The President reported that the C.S.I.R. had requested the co-operation of the Club in collecting specimens of Australian plants from which drugs may be derived.

The deputation which recently met the Chief Secretary to protest against the destruction of the seals at Phillip Island was also reported on by the President. The outcome had been a negative one, but it is hoped that no tender will be received for the killing of the seals.

Mr. Morrison urged members to forward contributions to the *Naturalist* so that all members might benefit from their observations.

Mrs. Sarovitch asked whether three broods of wagtails in a season was usual. Mr. Chisholm replied that this was a large number, but such matters depended on the nature of the season.

Both Mr. Willis and Mr. Painter made reference to one-legged Indian minahs, the former to a bird which had annually raised a brood for the last ten years, and the latter to a bird which for some years past has been fed by its mate.

EXHIBITS

Mr. Chisholm showed a photograph of a handbill of John Gould's offering a reward for the recovery of bird-skins stolen in 1845.

Both Mr. Ivo C. Hammet and Mr. R. G. Painter had their usual large monthly exhibits of cultivated Australian wildflowers, amongst which might be mentioned *Sollya heterophylla*, *Melaleuca hypericifolia*, *Leptospermum rotundifolium*, *Callistemon citrinus*, *Grevillea leucopteris* and *Dendrobium canaliculatum*.

Mr. C. French:—Ten species and varieties of *Leptospermum*, garden-grown at Canterbury.

Mr. H. P. Dickins:—Water-colour drawings of *Diuris punctata*, showing abnormal growth during the present season at Beaconsfield.

Mrs. E. Freame:—Octopus eggs attached to an oyster shell, crabs associated with Tunicates, also a sea-slug and spindle shell.

Mr. N. Lothian:—Albino seedlings of *Pittosporum undulatum*.

WHAT OF THE FUTURE?

The increased gravity of the international position, resulting in lighting and transport restrictions, makes it necessary for the F.N.C. to consider closely the question of future meetings and excursions. The Committee invites members to attend the January meeting prepared to discuss this important matter and to make relevant suggestions.

JOHN GOULD'S STOLEN BIRDS

By A. H. CHISHOLM, Melbourne.

In the days of discovery in Australian natural history many specimens, both botanical and zoological, were lost at sea from time to time. There are also records of specimens having been stolen—and never recovered.

A remarkable instance of theft in relation to Australian birds is the case of Captain Charles Sturt's collection of water-colour drawings of Parrots. When John Gould visited the explorer in 1839, at his home at Varroville, some twenty miles west of Sydney, he was much engaged by the paintings and offered to buy them. But those pictures had been the delight of Sturt's leisure hours and could not be bought. Sadly, soon after Gould saw them (and possibly because he praised them) they were stolen, together with sundry treasured letters and journals, from the military chest in which they were kept. The thieves were traced to Sydney by black-trackers, but neither paintings nor journals were seen again by Sturt, and to this day no one knows what became of them.

A few years later Gould himself suffered loss by theft. He refers to the matter in his *Handbook to the Birds of Australia* when dealing with *Emblema picta*, the Painted Finch. The only example of this beautiful bird he had seen, he wrote, was presented to him by Benjamin Bynoe (surgeon of H.M.S. *Beagle*), who had procured it in the far north-west; and he regretted to add that the specimen had been stolen from his collection, together with "some other valuable birds," in the year 1846.

That, surely, was a curious occurrence. What manner of man would wish to steal a batch of bird-skins? How would he get access to a collection without risk of detection? And how would he dispose of such distinctive material? Whatever the explanation, the fact is that the specimens, like Sturt's paintings, were never recovered; they had not been traced by the time Gould published his *Handbook*, in 1865, and no information on the subject has since been recorded.

If, however, the "Mystery of the Missing Birds" still remains a mystery, it is possible now to shed light on the matter by giving details of the nature of some of the stolen specimens. This information is revealed in the accompanying illustration. It is a reproduction of a handbill (eleven inches deep and nine inches wide), which Gould had in his possession for more than thirty years, and which I recovered amongst other Gouldian papers in England in 1938.

The first point to be noted, apart from the fact that £20 reward was offered for the recovery of the specimens, is that the stolen birds numbered at least ten. The second point of interest relates to the date; Gould, who was always unstable in such matters,

£20 REWARD. STOLEN, Sometime since the 8th instant, A NUMBER OF SKINS OF VALUABLE BIRDS,

Amongst the Skins Missing are the following:—

Three beautiful Parrots, one about 11 inches long, with scarlet across the forehead, on the shoulder, and on the vent; back brown, breast green.

One about the same length, crown of the head black, breast yellowish, with crescentic bands of black.

One very small and beautiful, with crescentic bands on the back, and three dots of black on each cheek.

Two very beautiful Kingsfishers, one very small.

Two short tailed Thrushes (very like Kingsfishers, in plumage) with metallic green on the shoulders.

Small Warblers, beautiful metallic blue plumage, another with black head, red back, and bill broken; small Finch, with brown back, scarlet cheeks, and belly with white spots on side.

Whoever will give such Information as shall lead to the Recovery of the above Property shall receive the Reward, or in proportion for any part thereof, on application to **MR. STUART, Printer, 38, Rupert Street.**

September 23rd, 1845.

Information to be given to Vine Street Police Station, Piccadilly.

STUART, Printer, 38, Rupert-street, (corner of Archer street.) Haymarket.

Reproduction of the handbill by which John Gould advertised the loss of Australian bird-specimens stolen from him in England. He states in his *Handbook* that the year was 1846, but the illustration shows that it was 1845. The handbill is an interesting and unique publication, and one of which nothing hitherto has been known in Australia.

mentions 1846 in the *Handbook*, whereas his own advertisement shows that the theft occurred in September of 1845.

Most of the specimens listed may readily be identified from the descriptions. The first of the "three beautiful Parrots"—brown back, green breast, and scarlet on forehead, shoulder, and vent—is *Psephotus pulcherrimus*, now known as the Paradise Parrot, which John Gilbert had procured on the Darling Downs in 1844. The second Parrot listed is *Platycercus venustus*, the Northern Rosella, specimens of which had been taken on the north-west coast and sent to Gould by Grey and Bynoe. (Gould used the term "Beautiful Parrakeet" for both of these birds.) The third of the missing Parrots is obviously the familiar Budgerygah.

The two "very beautiful Kingsfishers" cannot be identified specifically; nor can the two "short-tailed Thrushes," although the latter are undoubtedly Pittas, since Gould wrote of *Pitta strepitans*: "It is said to be very Thrush-like in its habits and disposition." Both of the "small Warblers" may be referred to *Malurus*, the first being one of the Blue Wrens and the second probably *M. melanocephalus*, the Red-backed Wren. Finally, the small Finch described is *Emblema picta*—type specimen.

It would be interesting to know what other species were represented "amongst the skins missing." A fair assumption, however, is that the specimens listed were the most important. Certainly they were a very beautiful lot, and the suggestion arises that they were stolen, not for any ornithological purpose, but because of their beauty. Is it too much to suppose that now, nearly one hundred years after the theft, they are still stowed away in some corner of England or Europe?

UNUSUAL NESTING NOTES

A remarkable example of a low nesting-site was that of a Black-capped (White-naped) Honeyeater found at Beaconsfield recently. The usual situation for the nest of this species, or any other species of the genus *Melithreptus*, is in a tree-top from perhaps 25 to 60 feet from the ground, but the nest beside Cardinia Creek was not more than 5 feet up. The dainty cradle, which had shredded red stringybark instead of animal-hair for lining, contained two eggs.

A second striking example of a low situation was the nest of an Oriole found at Wattle Park; it was only 7 feet from the ground near a path, whereas the usual situation is from 15 to 30 feet up.

The beautiful little Mistletoe-bird varies considerably in its choice of a nest-site. Two pretty examples found at Toolern Vale recently were only 6 and 8 feet from the ground; but at times a situation as high as 60 feet may be selected.

Other nesting-notes of late include a Mountain Thrush at Beaconsfield with three eggs on November 9 (distinctly late); a Speckled Warbler at Toolern Vale with two of the beautiful red eggs on November 16 (also late); the finding of two Rufous Song-larks' nests, with young, in one afternoon at Wattle Park; and the finding, at Ferntree Gully, of a Golden Whistler's nest with two brown-spotted eggs, one having a *cream* and the other a *buff* background.—A.H.C.

PRASOPHYLLUM WOOLLSII F.v.M.

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

No official record of this diminutive orchid has been made for about fifty years. There is a specimen in the late Henry Deane's collection in the National Herbarium at Sydney dating back to the 'eighties. It was collected at Gladesville on the Parramatta River, and may have been the original Fitzgerald's plate in *Austr. Orch.* II.3. It is labelled "Type," but this is clearly a mistake, for Mueller had described and named the species from specimens collected by Miss Atkinson in the Blue Mountains twenty years before.

Recently, I spent a very delightful week at Mount Irvine in this area, and although the long-prevalent drought was in evidence even in the mountain valleys, some interesting "finds" were scored. Miss G. Scrivener, obviously gifted with the "orchid eye," was the lucky member of the party to discover a colony of this long-lost little *Prasophyllum*, growing on dry ground near what should have been a typical Blue Mountains swamp at the head of a gully.

The Mount Irvine specimens differ from Fitzgerald's plant in that they are much deeper in colour, and cilia are present not only on the labellum and petals, but also on the dorsal sepal and the column-appendages. This latter distinction is rather important, as we have been accustomed to group the species of the section *Genoplesium* according to the presence or absence of cilia, and to their incidence, when present, on certain segments of the flower.

Hitherto, *P. Woollsii* has been described as possessing cilia only on the margins of the labellum and petals. It appears to me quite clear, however, that it must be regarded as variable in this respect. In some flowers the cilia were very feebly developed on the dorsal sepal, and were scarcely perceptible at all on the column-appendages; in others they were as plainly visible as on the labellum and petals. Moreover, if Fitzgerald's plate be consulted it will be observed that the column of *P. Woollsii* has exceptionally large appendages, shaped rather like a crab's claw; and that the labellum is ciliate only near the apex. In these respects the Mount Irvine flower is precisely identical, and I do not think we can doubt that it is Mueller's species.

The very deep colour of the mountain flower as compared with that of the Parramatta River has analogies in other orchids; e.g., *Caleana major* and *Cryptostylis subulata*. Viewed under an ordinary pocket-magnifier, the labellum of this tiny orchid looks like dark-maroon velvet; under a higher-power lens it is seen to be minutely and densely papillose all over the surface.

NOTES ON THE MINERAL REPLACEMENT
OF FOSSILS

By F. S. COLLIVER, Melbourne.

Fossils being evidences of past life on the earth, it follows that many of the specimens have had an adventurous career since they were first laid down as dead animals or plant fragments in the original mud or dust which now is the fossil deposit they can be collected in. Many specimens retain their original substance throughout the ages owing to its peculiar property of resistance to change. Other specimens alter their constitution rapidly, and thus we obtain a variety of preservation minerals.

Good examples of the first-mentioned are sharks' teeth, which in the Tertiary deposits at least are usually found little changed in composition from the time they formed portion of the living animal. This is due to the properties of the enamel of the tooth, which is recognized as being one of the hardest and most resistant of the organic substances known.

Other specimens that suffer little change are, strangely enough, insect wing-cases, skin fragments, etc., which consist of a hard, horny material known as "chiton." Similarly, shells of the Brachiopod genus *Lingula*, being of a somewhat similar material, are little changed in substance even though of Silurian age as found here in the bed-rock of Melbourne.

The Pleistocene crustacea common around Port Darwin have their exoskeleton little changed from what it was during life, the material (a compound of carbonate and phosphate of lime on a chitinous base) being also very resistant.

Many shells, bones, etc., either not being so resistant or being in deposits which are very porous, are attacked by meteoric waters probably containing other solvents in solution as well, and are soon dissolved entirely away, leaving just the impression of the original specimen. These may remain as the hollow impressions, or again other mineral matter may be carried into them in solution thus infilling the cavity formed. If infilling does not take place, such specimens as one-time shells when broken across will show a cast of the internal cavities and an impression showing external ornament and shape, the intervening space being that which was once occupied by the actual shell.

Leaving out such examples as sandstone replacements, probably the most common mineral to be noted is Calcite (CaCO_3), chemically known as calcium carbonate. All limestones are calcium carbonate more or less pure, and the term Calcite is applied to the unfossiliferous purer portions of the rock.

The various shells, corals, echinoderms, etc., that go to make up the limestone deposit were originally themselves calcium

carbonate, and thus have suffered little change in becoming fossils. Calcite does replace wood, however, as at Kilcunda, but little of the woody structure is preserved, as when crystallization takes place other structures are mostly destroyed.

An interesting specimen in the writer's collection, is a Brachiopod or Lamp Shell from the Tertiary beds of Torquay, Victoria; in this the Brachial Loop is replaced by a series of small Calcite crystals.

Travertine, the calcium carbonate deposit from springs or rivers, often preserves twigs, seeds, nuts, leaves, moss, etc., mainly as incrustations; and petrifying springs are generally strong solutions of calcium carbonate. Change of material does take place when, as often happens, limestones are replaced by quartz or silicon dioxide (SiO_2) in one or more of its many varieties.

Flint, a translucent crypto-crystalline variety of quartz, is a very common replacement mineral, and the Tertiary deposits near Pt. McDonnell contain many flints showing remains of Polyzoa, etc. Possibly the best examples of mass preservation in flint are to be found in the chalk (Cretaceous) deposits of England and Europe. Among these may be mentioned the flint pebbles of Brighton, England, where nearly every pebble shows the remains of a sponge.

Chert, an opaque variety of silica, often replaces limestones, and the corals, shells, etc., well retain their structures in this new material. This is a fairly common mineral replacement in the Silurian limestones of Lilydale, Victoria.

Quartz commonly replaces wood, and many petrified forests are known; an outstanding example being that of Arizona, where tree trunks up to 300 ft. long are perfectly preserved. Many of these specimens are replaced with the cellular structure as perfect in the new material as it was originally in the wood. Petrified wood is common in deposits of all ages since woody structures came into being, and, although at various times stained by iron or some other colouring agent, still remain principally silicon dioxide or quartz.

Beekite, a chalcedonic variety of quartz, often replaces fossils in the New Red Conglomerate of South Devon, England, and many of the large Foraminifera, as Nummulites of the Middle East, are also replaced by this mineral.

Chalcedonic quartz occasionally replaces shells, mainly of the genus *Turritella*, in the Tertiary deposits of Aldinga, S. Australia.

Precious Opal is a common replacement mineral for many kinds of fossils. Coober Pedy opal deposits have given us numerous reptilian bones and teeth, shells, belemnites, etc., preserved by this mineral, and specimens of opalized wood with worm burrows (probably made by a prehistoric *Teredo*) replaced by a different coloured opal, are also found in this locality.

PLATE XXIII



Mineral deposit from Cave Hill, Lilydale. It is often mistaken for a fossil fern.

Photo: H. T. Reeves.

The next most common replacement minerals are the ores of Iron. Victoria is noted for its ironstone beds containing countless fossils. Whilst these are preserved mainly as casts and impressions, many replacements are known in the yellow hydrated oxide, *Limonite* ($2\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$). This mineral forms economic beds of ore in many parts of the world, and they are mostly fossil bearing; a deposit at Abbotsbury, Dorset, contains numerous Ammonites, and a deposit at Clinton, New York, of Silurian age, contains countless replacement fossils.

Marcasite (FeS_2) a sulphide of iron, crystallizing in the Orthorhombic System, is a common replacement mineral for wood and fruits, Ammonites, etc., more commonly in England than here. Being an unstable mineral it seldom remains as Marcasite long after collection without special preservative treatment. One replacement of special interest made by this mineral is where Diatom skeletons, originally Silica, are turned to Marcasite. Such specimens are common in the London Clay beds.

Vivianite ($\text{Fe}_3\text{P}_2\text{O}_8 \cdot 8\text{H}_2\text{O}$) a hydrated phosphate of iron, has been responsible for an interesting replacement in Victoria. At the Wannon Falls, in volcanic ash beds below the lava, a lower jaw complete with teeth of a prehistoric kangaroo, all replaced by this blue mineral, was collected some years ago.

Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$), a hydrated calcium sulphate, often formed by the breakdown of the calcium carbonate of the fossil itself, forms interesting replacements. The Tertiary beds of Blanchetown (South Australia), contain many Brachiopods and Nautilus shells completely filled with the clear crystal variety of gypsum known as Selenite. An interesting point about these fossils is that many of the Brachiopods have the brachial loop retained in its original material and position, whilst the Nautilus shells have the siphuncle similarly retained.

Barite (BaSO_4), barium sulphate, often replaces calcium carbonate fossils, and at Woori Yallock (Victoria) many small specimens of Crinoid stem fragments, etc., may be found. Mr. S. R. Mitchell, in the *Vic. Nat.* (vol. 46, no. 10), has recorded a specimen of the coral *Favosites* (sp.), from this locality, the specimen being some 45 mm. across.

Cassiterite (SnO_2), tin oxide, is responsible for some interesting replacements at Emmaville, N.S.W., where small shells and Crinoid stem sections are found with the stream tin.

Glauconite (hyd. silicate of iron, and potassium) often infills the shells of Foraminifera, and with the destruction of the shelly matter, perfect internal casts are left behind.

Native Silver (Ag.), possibly the most interesting of all these mineral replacements, is to be found at the mines of Aspen, Colorado, where fish scales and other remains are found coated with metallic silver.

Another mineral, commonly replacing the chitin of graptolites and not definitely known as regards composition, may be termed for the time being a *Talcose mineral* (Gumbelite? T. S. Hall). This is a common replacement mineral in the graptolite beds at Lancefield and Gisborne.

The following three examples are not correctly termed minerals, but may be referred to as organic minerals:

Coal. Films of coal are the replacements of vegetable matter, leaves, stems, etc.; in many of our coal measures, fossil remains. As these specimens have been turned to coal without a great deal of disturbance, the venation and other surface characters of the plant will nearly always be found on the stone beneath the coal film.

Lignite. Brown coal consists of, among other materials, structurally little changed woody material to which the mineral name Lignite is given.

Carbon as Charcoal. Many of our Tertiary deep leads contain fruits and seeds, etc., that have been carbonized, and similarly the old river silts contain odd stems and roots of ferns, etc., all carbonized. The old river silt deposit at Clifton Hill has many such specimens.

Serpentine ($2\text{H}_2\text{O} \cdot 3\text{MgO} \cdot 2\text{SiO}_2$). A hydrated silicate of magnesium forms vast masses in the Laurentian formation of Canada, and certain more or less definite structures throughout the mass—e.g., canals later infilled with calcite—have led many authorities to suppose this deposit to be of a fossil somewhat allied to the Foraminifera. The general opinion, however, is that these specimens are only mineral segregations.

In conclusion may be mentioned an entirely mineral deposit often mistaken for a fossil fern. *Dendrites*, *Dendritic Manganese*, or *Psilomelane* (Hyd. oxide of Manganese) is the mineral, and the accompanying photo. of a specimen from Cave Hill, Lilydale, will show its fernlike form. It appears that this mineral is carried by the universal solvent water into the joints and cracks of the rock when they open up under the influence of heat. When cooler conditions develop later and the cracks close up, this mineral is forced to run away from the pressure and thus this characteristic form ensues.

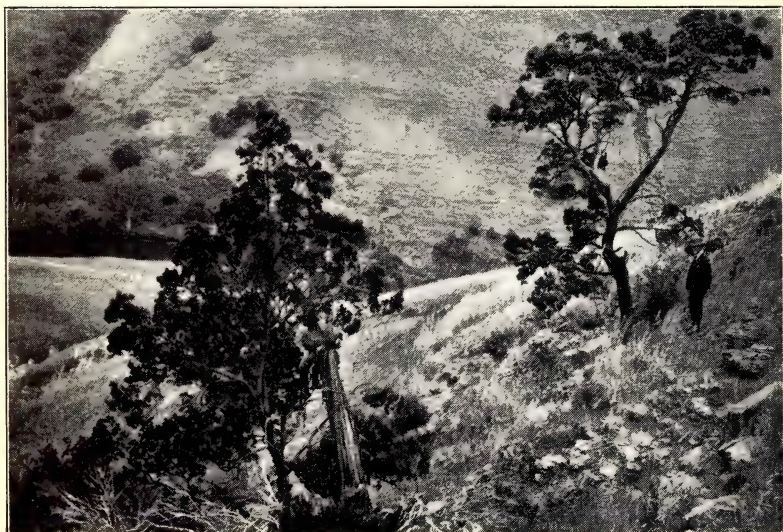
CORRECTION

Mr. W. H. Nicholls desires to mention that in his paper on *Caladenia clavigera* (Vic. Nat. for December, 1941) in the second paragraph, second sentence, he inadvertently omitted the word "not." The statement should read: "The sepal points are *not* invariably clavate."

PLATE XXIV



The Sentinel Pine of Jackson's Creek.



Murray Pines (*Callitris glauca*) at Jackson's Creek.

Photos: W. H. Nicholls.

THE LONE PINES OF JACKSON'S CREEK

By W. H. NICHOLLS, Melbourne.

The pine trees on the Jackson's Creek, beyond Sydenham town, in Victoria, are botanically known as *Callitris glauca*. Commonly these trees are called "Murray pines," which signifies their Murray River habitats where *Callitris* (several species) are frequently met with. The scientific title is in reference to the genus (family) and to the specific characteristics. The former is derived from the Greek *Kalos* (meaning beautiful), and the latter applies to the attractive foliage of this particular species.

The present Jackson's Creek pines (there are approximately half-a-dozen) are the sole survivors of a colony and the only remaining naturally-grown example of *Callitris* in close proximity to Melbourne—not forgetting those few trees which occur on the Lerderderg and Werribee Rivers near Bacchus Marsh.

A grand old warrior, symmetrical still, but having now only a crown of foliage, stands, sentinel-like, overlooking the precipitous river valley. Etched against a greying sky, it looks a fairy tree.

In a sheltered nook immediately below the level of the plains a batch of pines stand, picturesque with their spreading branches, a few still well-clothed in the velvet green of their lovely foliage. A near view, however, reveals the decrepit condition of all these conifers. Their glory days must have been also the days of the earliest colonists. These pines now cannot resist for long the rigours of these windswept and sunbaked areas, since much of their natural protective undergrowth has gone in a place where cattle, sheep, and brer rabbit roam at will. Hence, no younger trees exist and no seeds can ever germinate to survive for long; and, be it noted, but few of the pines here bear fruit at all. It will be a thousand pities if, to the next generation of Australians, these picturesque pine trees are but a record.

Some interesting and extremely hardy shrubs still persist hereabouts, but in ever-decreasing numbers: namely, the Desert Cassia (*C. eremophila*), a very attractive golden-flowered shrub like a *Boronia*; the Desert *Myoporum* (*M. desertii*); the *Dodonaea* (hop-bush); the *Correa* (Native Fuchsia), and a few Eucalypts and Acacias. But the lone pines (despite their comparatively small size) still dominate the landscape hereabouts. They appear to belong to these rugged places—are really wanderers from more northern climes—and to the extensive grass-coloured plains.

Some day we must miss these "lone pines on the Jackson's"; and when the very last tree falls to its rest we will recall them in all their beauty and will retell the tales of our happy excursions across the plains to see them, and where so many other floral treasures have been found—and lost.

A NEW VICTORIAN GENUS OF FERNS

By N. A. WAKEFIELD, Genoa, Victoria.

One of the most interesting additions to the Victorian *Pteridophyta* was that of *Diplasium japonicum*, which was recently discovered in East Gippsland. The several other new Victorian fern records from that district in recent years have been of species known to grow in the extreme south of New South Wales, so it is not surprising that they should have been found on the Victorian side of the border. The case of this *Diplasium*, however, is quite different.

The species was only doubtfully listed in *Flora Australiensis* (1877) when, for this plant, George Bentham wrote: "N.S.Wales. Illawarra, a single specimen in Herb. F. Mueller, without the collector's name, so possibly some mistake. The species is east Asiatic, extending to South China and Japan." It is now known to occur in S.E. Queensland; and for New South Wales Miss A. T. Melvaine wrote (in *Proc. Linn. Soc. of N.S.W.*, 1936): "... recent collections from several localities in the North Coast district have confirmed the original record."

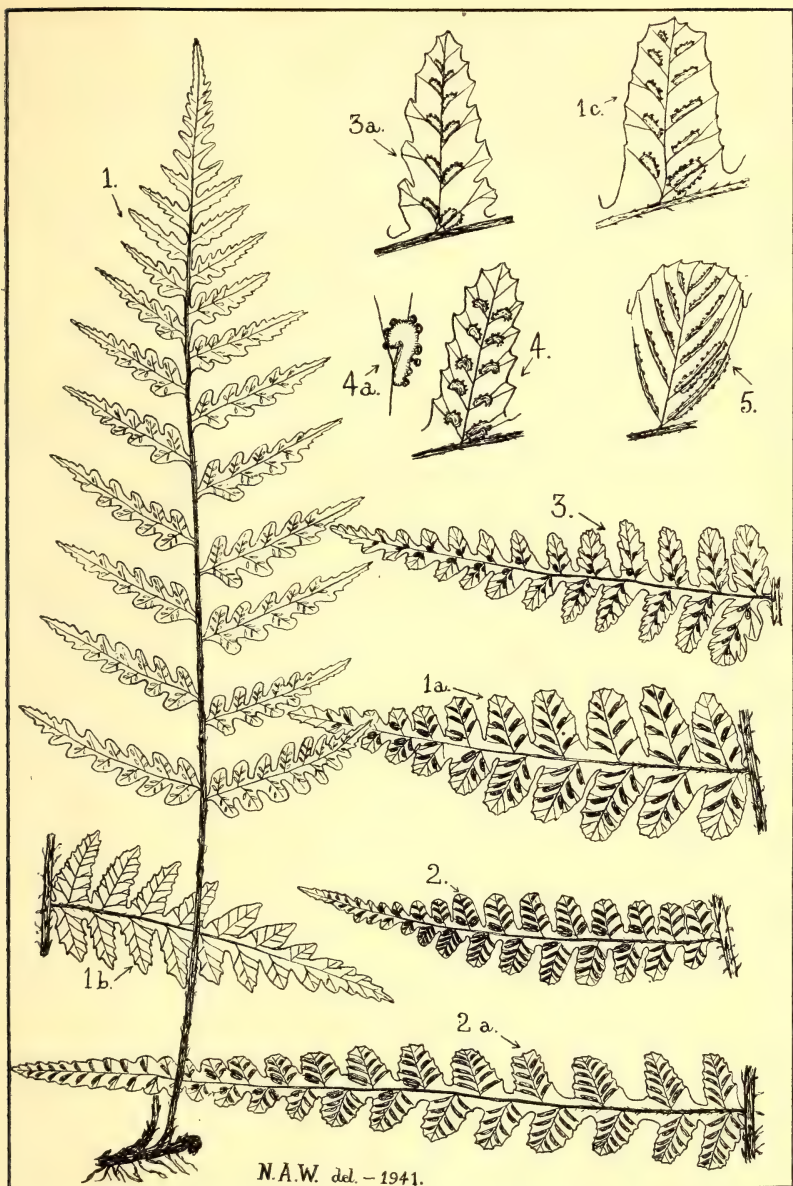
The history of the plant in Australia has an interesting parallel in the story of its recording in New Zealand. H. B. Dobbie, in *New Zealand Ferns*, wrote: "The rarest *Asplenium* in New Zealand; reported only from the Kermadec Islands and the northern end of the North Island." These localities are of the latitude of South Queensland and Sydney, respectively. Then later he wrote: "since, . . . it has been reported from south-west of Taupo and Nelson." The latitude of the latter place is the same as that of Tasmania!

On August 3, 1941, the writer found some dozens of plants in wet gravelly soil of a shaded "jungle" flat by the Upper Combienbar River; and on August 24 a few more plants were discovered in a similar place near where the Princes Highway crosses the Brodribb River. In both cases the plant which is known in Australian botanical literature as *Athyrium umbrosum* was growing in association.

Investigation of this latter species reveals that it is quite distinct from the true *Athyrium umbrosum* of south-eastern Asia, so Robert Brown's name *australe* will have to be revived for it. Furthermore, our plant is not a true *Athyrium*, but must be placed in the genus *Diplasium*. The two genera are distinguished as follows:

Athyrium.—Sori small, often curved, mostly at the fork of the veinlets proceeding from the midrib. (See Figs. 4 and 4a.)

Diplasium.—Sori linear along veins pinnately diverging from the central vein of each lobe of the pinnule. Indusium narrow, often opening on both sides of the nerve. (See Fig. 5.)



Genus *Diplasium*. For Key, see page 142.

In *D. japonicum*, Asiatic (hence typical) specimens apparently never have bifid veinlets (Fig. 2a), while New South Wales specimens sometimes show a few bifid ones (Fig. 2); but in Victorian examples the majority of the veinlets are branched (Fig. 1a) as in *Athyrium* (Fig. 4). In *D. australe* the veinlets are generally branched. (Fig. 3.)

In these two Victorian species the sori are no more bilateral than in true *Athyrium*; that is, only on veinlets proceeding from the junction of the midrib and the main vein of each lobe; and they differ further from typical *Diplasium* in that the sori are short and broad, though never curved as in *Athyrium*.

So it is apparent that though our local species certainly do not belong to *Athyrium*, they are not typical *Diplasium*. Actually they belong to a rather large group which, according to some authorities, may form a separate genus between the other two; but until the advisability of such a division is investigated, the group should remain as a section of *Diplasium*.

The two Victorian species are as follow:

Diplasium japonicum (Thunb.) Bedd.—Rhizome shortly creeping, scaly; fronds 8 to 20 in. long, on a thick fleshy stipes of about the same length, pinnate below, pinnatifid above, scales of rhachis and lower stipes thin brown broad and pointed; pinnae 2 to 5 in. long, deeply cut almost to the midrib into rounded slightly denticulate lobes; larger lobes $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. wide, with simply pinnate venation; venules sometimes once forked and when fertile each bearing a rather short oblong or linear sorus with the indusium opening forwards towards the main vein; main rhachis, midribs and main veins sparingly clothed above and below with tiny white hair-like scales. Ranging from India, China and Japan through Malaya and Polynesia to Eastern Australia and New Zealand. In Victoria, growing at Combienbar and Brodribb.

Diplasium australe (R.Br.) nov. comb.—Rhizome very shortly creeping, scaly; fronds 3 to 5 ft. long, twice to thrice pinnate with lobed pinnules; lobes pinnately veined with branched veinlets; sori as in *D. japonicum*, but closer to the main veins. Distributed from Queensland through Tasmania to New Zealand. *Allantodia australis*, R.Br., Prod. 149, (1810); *Athyrium*, Presl.; *Asplenium*, Brachenr.; not *Athyrium um brosum* (Ait.) Presl.

KEY TO ILLUSTRATIONS

- Fig. 1. *Diplasium japonicum*, a small frond ($\frac{1}{2}$ nat. size); a, a primary pinna, fertile; b, a primary pinna, sterile (both nat. size); c, lobe of a primary pinna (twice nat. size). All Victorian material.
- Fig. 2. Primary pinna of *D. japonicum*, New South Wales; a, Ditto, India (both nat. size).
- Fig. 3. Secondary pinna of *Diplasium australe* (nat. size); a, lobe of secondary pinna (twice nat. size).
- Fig. 4. Lobe of a typical *Athyrium* (twice nat. size); a, sorus (x7).
- Fig. 5. Lobe of a typical *Diplasium* (twice nat. size).

"AS THE TWIG IS BENT—"

By BLANCHE E. MILLER, Melbourne.

Over a period of years, a small band of enthusiasts have given of their knowledge and time in an endeavour to foster a love of nature in the younger generation. This has taken the form of indoor talks and demonstrations and out-of-doors excursions to which school children have eagerly looked forward. While it has not always been possible to see the immediate results of these activities, still there has been sufficient evidence to prove beyond doubt that it was not so much wasted effort.

Normal children evince an interest in living creatures from an early age, but, when the schools claim them, this interest is not always encouraged by their teachers, to some of whom nature study is unpopular only because of their own lack of knowledge of the subject. Without the co-operation of the teachers, the ability of the young folk to interpret correctly their original observations is largely a matter of chance, and may end in their discouragement.

In a comparison of experiences with other workers there is unanimous agreement that the outstanding factor that counts for success in the teaching of nature study to a class is the attitude of the teacher towards the subject. One could actually name teachers who have exerted such an influence that the succeeding teachers have had not only to tolerate nature study but to take up the subject actively, in order to save face with the pupils!

Again, it is difficult to determine what percentage of individuals, outside the schools, really have any desire to learn about our unique fauna and flora, or appreciate the opportunity to study under acknowledged authorities. Some years ago, the late Dr. J. A. Leach was lamenting the apathy manifested by the students in his nature study class. They came to be amused and entertained, rather than to be instructed, and he predicted that in years to come, of the two hundred students who had been enrolled, it would be possible to count on the fingers of one hand the ones who would still be bird-minded. It seemed, indeed, a pathetically small number, and in an effort to be conciliatory I ventured to remark that, by being diligent, perhaps some day I might be the thumb! What an avalanche of withering scorn I unwittingly brought down upon my head! It appeared that the thumb—or rather the hind toe—of a bird was of very great importance. In earlier times, scientists had classified birds partly by its presence or absence, or by the position of the hind toe when present. It availed nothing to proffer the excuse of ignorance, rather than of ambition; that was even more convincing evidence of the futility of the good Doctor casting pearls in the wrong direction.

Nor will it serve any good purpose to tell whether his prediction proved right or wrong.

One of the earliest bodies to organize extensive field excursions for young folk was the Gould League of Bird Lovers, with which must be coupled the name of the indefatigable honorary secretary, Mr. H. N. Beck. To his task he has brought much enthusiasm, and many years of teaching experience enabled him to judge with accuracy the capabilities of children of every age. With not fewer than 147,000 members, each of whom is pledged to protect the useful native birds and their eggs, and who possess, moreover, a handsome coloured certificate as a constant reminder, some idea may be formed of the colossal amount of clerical work it involved. It is as much a tribute to his ability as to the cause of natural science that Mr. Beck can command the services of naturalists on the last Friday in October, which has been devoted to bird study ever since the inception of the League, early in the century. Even though some of the naturalists may have doubts as to the lasting impression the children gain in the field on that auspicious day, their loyalty is fired by the ardour and unflagging effort expended, year after year, by the children's champion.

Personally, I feel well pleased if but one child in fifty shows some interest. To see a little face light up as if someone had flicked on a switch, to hear the smothered awe in the involuntary expression, or see admiration in the eyes of a grubby urchin as he looks into the nest of even a common bird, is sufficient reward for the whole day's effort. Occasionally, unrehearsed incidents cause a little diversion; or a child may ask a question that would require all Solomon's wisdom to answer.

One youth inadvertently paid tribute to the artistry of a Grey Thrush. "Where is the nest?" he queried as he looked at the eggs reflected in a mirror. He was invited to rejoin the queue for a more detailed examination, so that he might see how well the nesting material matched its immediate surroundings.

Not the least surprising thing about the young folk of to-day is their poise and confidence. We of an older generation would have been humbled to the dust if publicly reprimanded. Not so our sunny-natured Australians. One demonstrator tells of a teacher in charge of a group, evidently not well versed in the lore of nests and eggs himself, but anxious that his pupils should acquit themselves creditably. The exhibit was the nest of the Hooded Robin, and instruction was being given of the difference in the colour of male and female, when a lad provoked his teacher's ire by his inattention. He was requested to state in what way the female Robin differed from her mate. How much the lad knew is problematical, but his answer was characteristic of the quick-wittedness of the knicker-bocker brigade, with maybe, a quiet dig at the master: "Please, Sir, she lays eggs!"

Nor is it always the younger folk who provide the day's most

amusing incident. An innovation, last year, was to give a number of highly qualified ornithologists a "roving commission." They were to be made use of, our instructions clearly stated. Not for one moment did a "rover" come to relieve me at my post, which I took to be a great compliment. Later, when two of them joined us at the end of the instruction period and told of all the nests they had discovered—far out of bounds—we realized that their interpretation of their commission had been far too literal!

A year or two ago, a party of overseas children was invited from the farm school at Rowsley. The day proved rather hot, and, as the groups were assembling for the return journey, it seemed a kindly gesture to speak to the little emigrants. Their fair-skinned faces were badly sun-burned, but they bravely denied that they were tired. I asked the nearest lad from what part of England he came, and was astonished to learn that he did not hail from England at all. Somehow, we had assumed that all these little ones were English, without taking the trouble to make sure. To a further question he said that he came from "Scotlan'," and the clipping off of the "d" left no doubt whatever about the matter. The next lad came from Ireland, and his tone implied that that was as good a place as Scotlan', and much, much better than England. "County Cork?" I suggested, being mindful of the country pride of these people, and the little son of Erin echoed my words, with an emphatic side-long inclination of his head that took me back, in thought, nearly half a century. The third lad's answer was delivered with a quiet smile, and without any challenge in the tone of his voice: "County Kent"; and any qualification of that statement would have been superfluous, for, in the words of an old song:

"It's a glorious heritage, deny it who can,
That dwells in the words 'I'm an Englishman'."

The Educational Tours to the Sir Colin MacKenzie Sanctuary arranged by the Tourist Bureau are equally provocative of much speculation as to the ultimate good achieved. Children from industrial suburbs, and those from better-class homes, as well as adolescents of both sexes from the high schools, have attended, and the general impression gained by those who act as honorary guides was summed up by a worthy member of our Club when he remarked that "naturalists are born, not made."

It would be idle to enumerate the long list of living creatures that can be viewed under the most favourable circumstances. Birds can be seen at close quarters that are usually observed through field glasses. Nocturnal animals that would not be seen in a lifetime by the average person submit gracefully to their siesta being disturbed by hundreds of visitors. Rare forms of life are there at hand, yet the question asked persistently is "When do we

see the snakes?" or more rarely, "Will we see the Platypus?" There is a regrettable lack of knowledge of matters of importance concerning our own country. The Cape Barren Geese stirred no geographical recollections, and few pupils could give the correct position of Flinders Island when we inspected the smaller Wombats. Major Mitchell Cockatoos took the initiative and never failed to exhibit their beautiful crests, but the epic journey of the Major through our State was evidently not a welcome topic out-of-doors.

That the animals on the Australian Coat of Arms can be seen stimulates little interest; in fact, the friendly Emus are rather an embarrassment following the parties around. One bright lass thought that Britishers were lucky inasmuch as no live lions roamed at large, and that the unicorn was merely a fabulous creature! While the mound of the Scrub Turkey is impressive, often one senses the incredulity of the party that the structure is not man-made.

Yet again it must be stated that the teacher in charge can make or mar the efforts of even the most painstaking guide, by maintaining discipline. School children are apt to think that the occasion is just a huge picnic. It would probably annoy the parents of children from the "genteel" suburbs to know that their offspring often appear to be suffering from mental stagnation, due, possibly, to having many so-called advantages. Children from less fortunate localities are more receptive and alert. One of the best groups that it fell to my lot to pilot around the Sanctuary were city sparrows socially, but nothing escaped their sharp little eyes, and their conduct was exemplary.

An occasion of importance was the visit of students from the Teachers' Training College—young men and women who would shortly go into schools to do some twig-bending on their own account. Each guide made an effort to make the day both entertaining and instructive, and so stimulate any apparent aptitude for natural history, admittedly the least-liked subject on the curriculum. It was a question openly discussed whether or not each group, or a goodly number in the party, had registered interest, and it was answered as often in the negative as the affirmative. Perhaps the truest summing-up was that of a former teacher who thought that some, at least, appeared to be very interested—in *each other*!

FALCON AND PIGEONS

Mr. E. W. Bunn, of East Camberwell, who went recently on a natural history collecting trip to Loftus, N.S.W., states that he found five rings from the legs of homing pigeons on the ground under a nest of the Black-cheeked Falcon (*Falco melanogenys*). Mr. Bunn's friend, who resides in the Loftus district, stated that he had found about 20 leg-rings under the nests of these birds. Apparently the Falcons destroy many valuable homers.

C. FRENCH.

"EXPLORING NATURE'S MYSTERIES"

The headline is the sub-title of a new work on natural history, published by Messrs. Robertson and Mullens, that will be warmly welcomed by Australian nature-lovers. The author, Ada Jackson (Mrs. W. C. Fawcett) of Western Australia, has arranged in her first book, *Seashore, Swamp and Bush*, an enchanting procession of creatures that crawl, wriggle, swim, buzz, writhe, or merely evolve through its pages. Equipped with a sound scientific training and field experience, Miss Jackson has allied a rare literary gift to produce a first-ranker among the many excellent books of its kind.

Excepting for birds, the book covers a wide range of nature study: marine and swamp life, insects, reptiles, spiders, ants, lichens, living as well as dead fossils, and plants. A specially delightful section is entitled "Nobody's Darlings," that begins with a plea for the farmer's friend, the lowly earthworm, and is rounded off by a chapter on frogs, made lovable despite indifference to their infantile offspring. A good word is also said for the blowfly. Many readers may be startled to learn that the so-called pest is of service to the medical world. The larvae "clean up fresh wounds in a wonderfully efficient manner and are used extensively in cases of damaged bone."

Written in popular vein, the book makes no pretence to specialisation. Textbook descriptions are avoided and where scientific terms are used their meaning is made clear. The seasoned field naturalist will find many new discoveries to marvel at, and other familiarly known facts are presented in a fresh light. How many Victorian botanists know of the *Kingia*, the "drumstick bush" of the West? Has the plant been cultivated here or the flower seen on the benches of Western Australian flora at our Wild Nature Shows?

The author, by a crisp simplicity of style, contrives to express a profundity of biological knowledge in a captivating way. On every page, her sense of humour bubbles up. Referring to the Cycads she says: "It is doubtful whether the enthusiastic gardener could ever encourage his pot of maidenhair to grow into a *Macrozamia*, but Nature and Father Time, hand in hand, can easily manage a minor miracle as this." Or again, "The owner of a Blackboy (*Xanthorrhoea*) may feed himself, scent himself, or blow himself up, as the spirit moves him."

The book is illustrated by a judicious selection of photographic plates, and the author imparts an added charm by her line drawings, interspersed throughout the text.—H.C.E.S.

EXCURSION TO WILLSMERE PARK

The hottest afternoon of the season on December 13 did not make for favourable conditions for the subject (always an interesting one), aquatic insects and pond-life generally. Only ten enthusiasts were present. Even the denizens of the lagoon refused to respond and "poor hunting" was the result. Despite the conditions an interesting time was spent. A suitable spot was chosen among some low shrubs on the shady side of the water, which in its rural setting looked very peaceful and attractive. Recent rains had submerged a quantity of the vegetation, and also, no doubt, was the cause of the absence in any quantity of animal life in the water.

Dragon-flies (*Odonata*) were plentiful, as was to be expected upon a sunny afternoon. In the lagoon their nymphs were present, but not as abundantly as those of the damsel-fly (*Zygoptera*). May-flies (*Ephemera*) were few. Larvae of caddis-flies (*Tricoptera*) were numerous and in variety. The bugs (*Hemiptera*) were represented only by the water-boatman (*Corixa*) and the water gnat (*Hydrometra stagnorum*). Crustacea was represented by shrimps, Cyclops, water fleas (*daphnia*) and *Cypris*.

EYRE SWARBRECK.

A PLATYPUS ROMANCE

English nature journals report the death recently, at the age of 82, of Mr. W. H. Caldwell, formerly lecturer in biology at the University of Cambridge. Thereby hangs a tale—one intimately connected with Australia's most remarkable furred animal, the Platypus.

Discovery of the Platypus by white men was first reported in 1799, eleven years after the first settlement had been founded. Then ensued a long discussion on the question whether the animal was a "fake": something synthetic after the manner of "eastern mermaids and other works of art." That question having been settled, another controversy developed around the question whether the Platypus was viviparous or oviparous. As early as 1817 Sir John Jamison, writing from Sydney, had stated categorically: "The female is oviparous and lives in burrows in the ground." But he offered no proof on the point, and therefore (and although aborigines declared that the animal laid eggs) controversy on the point raged for many years. It was not settled, in fact, until 1884, in which year W. H. Caldwell revealed that both monotremes, the Platypus and Echidna, were egg-laying.

Caldwell at that time was a bright young zoologist of 25 years. He came to Australia specially to investigate the reproduction of monotremes and marsupials, and established himself in the Burnett River district of Queensland. There he discovered definitely that both the Platypus and Echidna hatched their young from eggs, and he decided to make the discovery known at once. He wrote a message, "*Monotremes oviparous, ovum meroblastic*," and sent it to a neighbouring station, where it would meet the passing mailman. The message was addressed to Professor Liversidge of Sydney University, and Caldwell asked that it be forwarded to the British Association for the Advancement of Science, sitting in Montreal.

That was done. The dramatic nature of the message took the conference by storm. Even to-day there are men who attended that gathering of nearly 60 years ago and who remember what a sensation was caused when Caldwell's message arrived from the wilds of Australia. At least, there were such men until a few years ago, for I met one of them (a Canadian) in Sydney, and when he saw a living Platypus, which Mr. Harry Burrell had made available, he became animated on the subject of Caldwell's message to the British Association in 1884.

Caldwell did not remain long in Australia. He returned to England and in 1887 published an important paper on "The Embryology of Monotremata and Marsupialia" in *Philosophical Transactions of the Royal Society*. After that he lapsed into the sedate life of a university lecturer and did nothing very distinctive. His fame rests on the foundation of that excursion to Australia so long ago, when he discovered the domestic secrets of both the Platypus and Echidna.—A.H.C.

A NESTING ODDITY

This has been a very good season for nesting birds in the Ararat district, but, unfortunately, many of the birds have met trouble through various agencies. Some members of the F.N.C. will recall having seen in September the nest of a Mud-lark, at a spot near Ararat, on a limb only eight feet or so above a lagoon. Well, a Grey Thrush has since taken possession of the vacated nest and is at present brooding. She merely put a few fibres on the bottom of the ready-made home. All you can see of her is a few tail-feathers sticking straight upward. A few years ago I saw a Grey Thrush brooding in a Wattle-bird's nest—or, rather, she built her own nest on top of the Wattle-bird's—but this is the first time I have seen one entirely use another bird's nest.

H. J. BLACKIE (Ararat).

Field Naturalists' Club of Victoria

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EXCURSIONS

SATURDAY, JANUARY 10.—Fern Tree Gully. Subject: General.
Leader: Mr. H. P. Dickins. Travel by the 1.38 p.m. train from
Flinders Street, running express from Richmond to Box Hill. Fare,
second return, 2/5.

MONDAY, JANUARY 26 (Foundation Day).—Belgrave. Subject: Ferns.
Leader: Mr. A. J. Swaby. Travel by the 9.18 a.m. train to Fern Tree
Gully, thence per bus. Fares, train, 2/5; bus (to Kallista), 1/- each
way.

SATURDAY, FEBRUARY 7.—Seaholme. Subject: Shore Life. Leaders:
Mr. and Mrs. J. J. Freame. Travel by the 2.15 p.m. train from Flinders
Street (Altona Line, change at Newport). Fare, second return, 1/2½.

NOTE.—Owing to war conditions, all future excursions are liable to
alteration or cancellation. The subject will be discussed at the January
meeting.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 2/-.

VICTORIAN FUNGI, by J. H. Willis, a beautifully illustrated and highly informative account of the Mushrooms and Toadstools of the State. Price, 2/6.

A CENSUS OF VICTORIAN PLANTS, by the Plant-names Committee of the Club, contains the vernaculars of all our plants.

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Vol. LVIII, No. 10



THE

Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, FEBRUARY 9, 1942

1. Minutes.

2. Subject for the Evening—

“Native Insects that have become Pests in Orchards
and Gardens.”

By Mr. Chas. French.

3. Correspondence and Reports.

4. Election of Members.

AS ORDINARY MEMBER
Thomas Griffiths, Esq.,
41 Glass Street,
Burnley, E.1.

PROPOSER
Mr. F. S. Colliver.

SECONDER
Mr. L. W. Cooper.

AS COUNTRY MEMBER
Clifton Cappie Towle,
“Diwana,”
18 Rutledge Street,
Eastwood, N.S.W.

Mr. S. R. Mitchell.

Mr. F. S. Colliver.

AS ASSOCIATE MEMBER
Master John Maughan,
43 Dendy Street,
Brighton, S.5.

Mr. P. C. Morrison

Mr. A. H. Chisholm.

5. Nomination for Membership.

6. General Business—

(a) Forthcoming Excursions.

(b) Questions by Members.

7. Remarks by Exhibitors.

8. Conversazione.

The Victorian Naturalist

Vol. LVIII.—No. 10 February 4, 1942

No. 698

PROCEEDINGS

The monthly meeting of the Club was held on Monday, January 12, 1942, at the Club Rooms, Royal Society's Hall. The President (Mr. P. Crosbie Morrison) presided and about 70 members and friends attended.

BUSINESS FROM MINUTES

(This reversed agenda was made necessary by the daylight saving now in operation.)

(a) Result of Plebiscite for Wild Flower Emblem for Victoria. Preferential voting gave the following result:—

1st—*Correa rubra* (Red Correa).

2nd—*Epacris impressa* (Common Heath).

3rd—*Brunonia australis* (Blue Pincushion).

It is of interest to note that the Red Correa was first by a large majority all the way through the voting.

CORRESPONDENCE

A letter from Mr. A. B. P. Underwood, who has been in Caulfield Military Hospital for some months. He reports that he hopes to leave shortly, and be back with his fellow members again.

REPORTS OF EXCURSIONS

Mr. H. P. Dickins reported on the excursion to Ferntree Gully, stating that Lyre-birds were in evidence.

ELECTION OF MEMBERS

Mr. Eyre Swarbreck was elected an ordinary member of the Club.

GENERAL BUSINESS

(a) Discussion re future of the Club meetings, under blackout regulations. This matter was brought forward by the President, who gave to members two suggestions received:—(1) That the Club cancel night meetings until further notice, and concentrate on Saturday afternoon excursions, making arrangements to hold a formal meeting during one of these excursions. (2) That the Club's meetings be held as usual, unless instructions to cease are received from the Government.

A lengthy series of discussions covering transport, ventilation, other localities for meetings, etc., was placed before the meeting by various members. Miss R. S. Chisholm suggested that for the

APR 2 1942

future lady members should meet at the porch of the Emily McPherson College and proceed together to the Club rooms. Finally it was decided that the Club meetings would be held as usual, but members were notified that possibly future developments would cause alterations to the excursion programme.

SUBJECT FOR THE EVENING

This was an illustrated lecture entitled "Among Tall Trees," given by Mr. C. L. Lang. It dealt with the flora and fauna of our forest country and an outstanding feature was excellent photographs of nesting birds. A large number of slides and an excellent running commentary made this lecture one of outstanding interest. A vote of thanks was proposed by Mr. A. H. Mattingley, seconded by Mr. Swaby, and carried by acclamation. Mr. Lang answered many questions at the close of the lecture.

NATURE NOTES

Mr. F. S. Colliver remarked, for Mr. F. Chapman, that examination of the scales of the common Cabbage White Butterfly, now such a pest in Australia, shows it to be distinctly different from the English butterfly of the same name. A characteristic of the English type is a notched scale and scent gland.

EXHIBITS

Mr. H. T. Reeves:—A series of coloured photographs of native flora.

Mr. A. H. Mattingley:—The Blue Starfish (*Linkia australis*), from the Great Barrier Reef.

Mr. R. G. Painter:—Seventeen species of native flora comprising: *Astartea fascicularis*, *Ajuga grandiflora*, *Bacckea virgata*, *Calothamnus Gilliesii*, *Eucalyptus platypus* var. *purpurascens*, *Hibiscus Huegellii*, var. *Wrayae*, *Melaleuca Huegellii*, *M. hypericifolia*, *M. lateritia*, *M. nesophila*, *Sollya heterophylla*, *Scaevola aemula*, *Swainsona galegifolia*, *Thomasia petalocalyx*, *Dendrobium phalaenopsis*, *Cymbidium iridifolium*, *Helichrysum Blandowskianum*.

Mr. F. S. Colliver:—Specimen of landscape marble from England and a large stem of *Lepidodendron* from Scotland.

Mr. J. Ross Garnet:—Minute land shell from Hedley, South Gippsland. Small Crab collected at Rye, October, 1941; two Beetles from swarms on *Eucalyptus botryoides* and *E. viminalis*.

EXHIBITION OF FLORA

An exhibition of pictures of Australian flora is to be given by Messrs. H. T. Reeves and W. H. Nicholls at the Kodak Gallery, Collins Street, opening at 3 p.m., on Thursday, February 12. The display will contain a large number of coloured photographs, mainly Victorian species, many of them taken *in situ*.

THE REMARKABLE STRIPED POSSUM

By DAVID FLEAY, B.Sc.

(Director, Sanctuary, Healesville)

The most strikingly coloured possums are the black and white members of the tropical genus *Dactylopsila*, belonging to New Guinea and North Queensland. Several years ago, during a visit to the gem-like island of Samarai (Papua), I met the first living Striped Possum I had seen, and the longitudinal stripes of clear black and white, the creature's curious hands, and many differences to more familiar possums made me particularly keen to have it under observation. This little fellow, however, was a pet at the home of Mr. and Mrs. Izod, of Samarai, and as much a member of the household as any child. Needless to say, it did not join my collection when the ship sailed south.

Evidently a member of the black-footed species (*Dactylopsila melampus*) this particular striped phalanger represented but one species of at least seven in and about New Guinea; an eighth is found in the jungles of North Queensland.

My chance to really see something of one of the *Dactylopsila* clan came early in June, 1941, when, thanks to the enthusiasm of Mr. Leslie Wright, curator of the Civic Park at Cairns, Queensland, a male representative of the single Australian species (*Dactylopsila picata*) made the journey to Healesville.

From the smiling skies and pleasant warmth of North Queensland this remarkable little marsupial flew the 2,000-odd miles from Cairns into the clouds, rain and cold of a southern Victorian winter. However, the "fate" of this Striped Possum was not nearly so unkind as it may seem. Packed in coconut fibre and snuggled warmly in a tiny cage, it received as much attention from Australian National Airways as any distinguished passenger. Following rapid transfer after landing it was established within two days of leaving Cairns in the centrally-heated Tropical House at the Sanctuary. Nevertheless, the attractive-looking creature—clad so conspicuously in Collingwood's "football colours"—did contract a slight cold; but that, fortunately, cleared up within a few days.

Not a great deal has been observed of the ways and peculiarities of these arboreal jungle dwellers, a fact explained by their rarity, dense habitats and strictly nocturnal habits. Hence the prospect of watching the antics of this "new" marsupial was distinctly enticing.

Approximately half the size of an adult Ring-tailed Possum, but nearly as long from nose to tail tip, the male *Dactylopsila picata* from Cairns is a mature specimen evidently some years old. It has now been in our Healesville collection for more than six months, and usually curls up in the same nest with two lovely little New

Guinea Possum Gliders (*Petaurus papuanus*) and a Victorian Short-headed Glider (*Petaurus breviceps*).

A year ago a tall tree was felled in the scrub outside Cairns and from the branches Mr. Wright rescued the Black-and-White Possum after it had been stunned by the fall. It is Mr. Wright's belief that normally these unusual and agile creatures live among the tops of the tall trees, seldom if ever descending to the ground, but crossing by way of the limbs to other trees.

Some time ago Mr. Wright secured a female Striped Possum but he found it exceptionally delicate and difficult to acclimatize under captive conditions. The male now at Healesville proved himself anything but a gentleman, and adopted a spiteful attitude towards the smaller lady, with the unfortunate result that she died. In his letters Mr. Wright wrote feelingly of the effective teeth of these peculiar phalangers, and in the early stages of getting to "know" the newcomer I had reason to endorse his remarks.

When annoyed and worked up to a biting mood the animal utters a surprisingly loud and prolonged throaty gurgling shriek, somewhat like a noisier edition of the droning scream of the familiar Sugar Glider ("sugar squirrel") and reminiscent also of water emptying out of a bath.

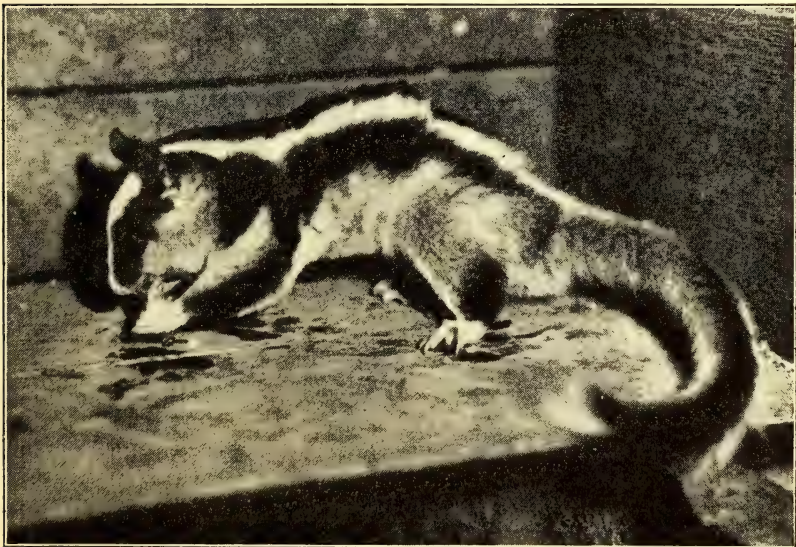
But for its colour and lack of a flanking "parachute" membrane, *Dactylopsila* bears many resemblances to the gliding possums, particularly in its insectivorous habits, peculiar voice and unequal digit lengths of the manus. It is likely that it is not far removed from the ancestral non-gliding stock from which at least some of the parachuting possums arose.

Here, without further delay, I must furnish an account of the most amazing characteristic of *Dactylopsila*. It is a feature one becomes aware of very soon! Somewhat skunk-like in its clear black-and-white colour scheme, it is a remarkable coincidence that our Striped Possum also owns—and is not at all selfish in sharing—a most pungent, disagreeable odour well calculated to repel enemies. This clinging, disagreeable scent, which, among marsupials, I can only liken to that of a big male Cuscus, soon permeates the animal's dwelling-place, the boughs, the woodwork, logs, and even one's clothing should the animal be incautiously handled.

When, on the day following its arrival, the possum was ailing, owing to a slight chill, its characteristic odour was noticeable, but not strong. However, within two days it was "smelling" in top form, so much so that several interested people who kindly inquired after *Dactylopsila's* health were assured most truthfully that he was "in the stink of condition!" I am sure no Cuscus could out-do a Striped Possum in this penetrating, clinging, and altogether devastating odour.



The Queensland Striped Possum (now at Healesville) seeking beetles and grubs in decayed wood. The exceptionally elongated fourth "finger" of one "hand" is visible. It is used for hooking insects out of crevices.



The strikingly-marked male Striped Possum of the Healesville Sanctuary. It is chewing a longicorn grub.

Photos.: David Fleay.

A close scrutiny at night of the actions of the Queensland animal has revealed some intensely interesting performances. Being strictly nocturnal, with an intense aversion to daylight, the Possum sleeps soundly in a hollow log all day and rarely appears until full night has fallen. It is sluggish when disturbed during daylight. In sleep its posture is not typically possum-like, for though curled into a ball it lies flat down and not rolled up in a sitting position.

On emerging for the hunting of the night the animal yawns prodigiously, and with long tail high in the air, sometimes at right angles to its back, it proceeds with an elaborate toilet performance standing well up on its limbs. The fur of its abdomen is combed with the claws of each hind foot in turn. Thereafter the marsupial's movements are ceaseless.

Lithe in its long-legged striding movements it appears to "flow" rather than jump from branch to branch. Seldom does it indulge in anything that could be called an outright leap.

It has been suspected and suggested that the elongated 4th finger of *Dactylopsila's* "hands" is associated with the procuring of insect food. This digit is nearly twice as long as its nearest fellow. The order of length on each hand is 4, 3, 5, 2, 1.

The provision of loose-barked limbs and old hollow boughs containing cockroaches, grubs and termites in the Striped Possum's home at Healesville has established beyond all doubt that not only is *Dactylopsila* more insectivorous in its diet than any other species of possum, but the sensitive fore-paws and long fingers are all-important in securing lurking insects and wood-boring grubs from their hiding-places. As it runs quickly to a new bough freshly brought from the bush the creature's loud sniffing is clearly audible as it seeks insect scents. On loose bark it vibrates its sensitive forefeet rapidly, presumably to disturb insects beneath it. Having scented the approximate position of its prey, *Dactylopsila* gives a surprising display of force in ripping off bark and slivers of wood with its teeth. The animal becomes so engrossed in its task that it is oblivious to all else.

If a hole in the wood is deep and narrow then the long fourth finger with its hooked nail is inserted again and again and usually a juicy grub is extracted skilfully. Sitting up in exactly the same manner as a Phascogale or Native Cat, *Dactylopsila* then chews up his catch and returns for more.

A variety of fruits, eucalypt blossom, coconut, jam, milk, bread and honey are other popular items on this curious animal's food-list; but undoubtedly it is mainly a specialist among insects and could not live long without them.

The large "corrugated" boring larvae of longicorn beetles and wood moths are among *Dactylopsila's* most delectable morsels, and the successful residence of the Striped Possum at Healesville has

been greatly helped by a regular supply of such grubs secured for me by the last aboriginal family still dwelling at Coranderrk, Healesville.

Associated with the strong insectivorous "leaning" of the Striped Possum must also be mentioned occasional attacks made by the captive animal on mice. Seized and killed by the Possum, the small rodents have been eaten "inside out," so that all that remained were the reversed skins.

It appears to be more than a coincidence that Cuscuses, some Possum Gliders and the Striped Possums, which are all insect-eaters to a greater or lesser degree, should possess strong odours.

The late Robert Grant, taxidermist to the Australian Museum (Sydney), mentioned reports of *Dactylopsila's* grub-feeding habits. Also, while collecting on the Atherton Tableland he found the remains of berries and leaves in the stomachs of Striped Possums. He records that blacks whom he had searching in elkhorn or orchid clumps in the trees disturbed several specimens, which were a bit dazed on being roused from slumber. The excited blacks called out "Tamin! Tamin!" which was evidently their name for *Dactylopsila*. In spite of the nimble scampering of these Atherton Striped Possums through the boughs they were out-manoeuvred and captured by the natives.

However, after observing the sluggish nature of my *Dactylopsila* in daytime I am not surprised at this report of easy capture. It would be a different matter at night!

CONCERNING THE PLATYPUS

In the *Victorian Naturalist*, vol. I, p. 87-89 (September, 1884), there are observations by F. J. Williams on the Platypus. He found eggs inside in November; the largest seen were about the size of pigeons' eggs; they had no hard shell; only a thick membrane. In December, he found no large eggs inside, but milk was present. He regarded the nest as fit to hold eggs or to rear young ones in.

The occasion of publication is the report of Caldwell's discovery referred to in the same number (p. 82); but the paper was read in October, 1880. There is no statement that the egg was actually laid as such, but the account has at least very near the essential points. I have no information about F. J. Williams except the statement (Editorial) that he had been observing for 28 years (p. 87).

The *Victorian Naturalist*, vol. III, p. 93, has a note on a very young platypus—1 in. x 1½ in. long—the special point being that the beak is soft and thus more adapted for taking milk. This specimen was obtained by aborigines when searching for grown specimens for the Rev. F. A. Hagenauer, of Ramahyack.

It seems remarkable that Dr. Geo. Bennett (observations 1829-60; see Wood Jones' *Mammals of S. Australia*, p. 29) did not find the eggs, but possibly he may not have had specimens at the right season. Mr. Williams says that he does not remember getting a female in October, though common in November. He notes also that the season may vary in other localities.

THOMAS S. HART, Croydon (Vic.).

A TRIP THROUGH THE GREAT DESERT OF N.W. VICTORIA

By R. G. PAINTER and I. C. HAMMET, Melbourne.

We can find no trace in the *Victorian Naturalist* of a description of the landscape and floral features of the stretch of country lying between Nhill and Murrayville, although there are many references to adjacent areas. The following account of a trip through this area by some of our members may be of interest.

The party consisted of Miss Irma Hammet (Commissariat Department); Mr. H. Lindner, of Vectis South, whose garden of indigenous plants is worth travelling many miles to see; Mr. E. Lord, Curator of the Horsham Gardens, and the authors of this article. (Messrs. A. Lindner and H. T. Reeves at the last moment were unable to accompany us.)

One has often wondered why maps of Victoria show a blank space between the Ouyen-Murrayville line and the main Melbourne-Adelaide line, but, after traversing this area, one wonders no more. About two miles after leaving Yanac we pass the last house until we approach Murrayville, 65 miles away. Passing through a gate we enter the sandhills. These gleaming white ridges have caught the eye for some miles back. Ridge after ridge of white sand, like the unending billows of the ocean, confront the traveller. Running approximately east and west, these ridges provide a natural switch-back which one goes up and down for mile after mile.

The botanical features of this so-called "Big Desert" are varied and indeed beautiful. Dwarf scrub of *Melaleuca pubescens*, *M. uuncinatum*, *Banksia ornata*, and other plants stretch for miles.

The young foliage of the Mallee is very attractive and plants of the dwarf *Baeckia crassifolia*, with their purple or mauve flowers, carpet the ground with a blaze of colour. Red flowers of *Correa rubra*, *Astroloma conostephoides* and *Prostanthera aspalathoides* provide a vivid contrast to the blue flowers of *Boronia coerulescens*, *Dampiera lanceolata* and *Halgania cyanea*. We find ourselves at variance with Lindley, who, in his sketch of the Swan River vegetation, described *Halgania cyanea* as having no beauty. A peculiar crystalline form of leaf is characteristic of the *Correa* found here. *Acacia spinescens*, *Daviesia brevifolia*, *Micromyrtus ciliatus*, and various *Hibbertias* are all ablaze with colour. *Banksia ornata* is easily recognized by the size and colour of the spikes.

The track steadily gets worse and our driver (Mr. H. Lindner) performs miracles in guiding the car and watching for new plants simultaneously. He stops suddenly to enable us to examine some striking yellow-flowered shrubs, which, examination shows, are *Phebalium stenophyllum*. Farther along the journey its congener, *Phebalium bullatum*, also is found.

Once again we are impressed by the tremendous root develop-



The beautiful *Grevillea pterosperma*. It is abundant in some places on the Desert sandhills.

Photo.: H. T. Reeves.



Desert Baeckea (*Baeckea crassifolia*) on the Nhill-Murrayville track.
Flowers: pale purple to purple-mauve.

Photo.: W. H. Nicholls.

ment of small plants in the desert. Roots of 6 to 12 inches in length are found on plants of 1 inch and even less in height. Windswept positions, scattered vegetation, loose sandy soil, and a blazing sun overhead cause the small plants to delve deeply for moisture. At a few inches depth the sand is quite moist, the loose sand acting as a mulch, and we have found that a loose sand or gravel mulch on even the hardest soil enables most of our desert plants to be grown easily in the average suburban garden.

The abnormal root development on even the smallest of plants, combined with the loose soil, makes the successful transference of small plants to the suburban garden very difficult.

At seven miles out we go through a gate in the Government vermin-proof fence of wire-netting and are amazed to see a car ahead of us, whose occupants turn out to be our editor, Mr. A. H. Chisholm, and Messrs. R. T. Littlejohns and W. H. Nicholls. "Occupants" is perhaps a misnomer, as these gentlemen were scattered far over the landscape. They reported that they had noted some interesting birds, but not many species.

We persuaded them, therefore, to accompany us to the first bore ($8\frac{1}{2}$ miles from the start) where some very welcome shade is provided by several nice clumps of mallee (*Eucalyptus dumosa*, *Behriana* and *calycogona*). While the billy boils, the bird-men peer eagerly around. The overflow from the bore forms several pools which are the home of many frogs, whose discordant croaks are almost deafening. Whilst enjoying our meal Mr. Chisholm gives us a poser. How did the frogs get there in the first place over so many miles of waterless country? No one had a satisfactory reply to give him.

After lunch, we say good-bye to our friends and push on. We pass large clumps of *Euphrasia*, the hollows between the ridges being at times quite purple—acres and acres of it. An occasional plant of *Exocarpus spartea* has us guessing for a while, and also now we see a few quandongs, and some patches of *Gyrostemon australasicus*, whose vivid red foliage and wheel-shaped fruit is very striking. No small plants can be found, and unfortunately the fruit is immature.

A keen lookout is kept for *Grevillea pterosperma*, one of the principal objectives of the trip being the obtaining of a small plant. The accompanying photo. shows what a gem this *Grevillea* is. It is found on the sand ridges from where we are eastward to Ouyen. It is of interest to note that Giles found it at Mount Olga, in Central Australia. Some very large clumps occur on the sandhills between Walpeup and Patchewollock. Several large plants are seen and many stops are made, but we go many miles farther before a few small plants are found.

Our joy can be imagined, because the search for small plants of this *Grevillea* has gone on for several years. One is led to the

conclusion that the seed of this plant, in common with that of several other desert plants, does not germinate every year. It is possible that the abnormal summer rain which this part of Victoria experienced last year was an important contributory factor to the presence of small plants.

One of the plants collected is doing very well and it is hoped that cuttings from it will lead to *Grevillea pterosperma* becoming a familiar sight in our gardens in the near future.

The second bore at 18½ miles is left behind and at 25½ miles we reach Moonlight Tank, our aim being to reach "Big Billy" Bore for the night's camp.

The lady of the party remarks on the similarity of the sandhills to the coastal dunes, and the illusion is heightened every time we top a sandhill, when the billowing green of the Mallee, as far as the eye can see, reminds one irresistibly of the billowing waves of mid-ocean. *Pimelea octophylla* is seen now in large numbers, and before reaching "Big Billy" Bore we find that uncommon plant, *Phebalium bullatum*, also *Bredemeyera scoparium*, *Beyeria Leschenaultia*, *Bertya Mitchellii*, and the beautiful blue daisy, *Olearia rudis*, which is greatly admired, and a keen lookout is kept for ripe heads. *Acacia rigens* is in full flower. We pass "The Springs" at 34 miles and as the shadows lengthen we pull in at "Big Billy" Bore at 44 miles. A lovely sheltered little dell is found at the foot of a very large sandhill, with the overflow from the bore forming a pleasant little pool in the foreground.

After the evening meal, a short walk to the top of the sandhill reveals the most outstanding floral feature of the trip. Some very large plants of *Lasiopetalum Behrii*, 5 or 6 feet in height, are found in full bloom. One plant with lovely pink flowers far outstrips all the others for beauty, and the following morning we are up at sunrise looking for small plants.

Here, on top of the sandhill about 100 feet above the level of the bore, the sand is quite moist 6 inches below the surface.

We leave this delightful little oasis with regret, and, cresting a rise, we come to several large yellow patches of *Loudonia Behrii*, which reminds one of the large yellow patches of this plant to be found near Mt. Zero. The dwarf patches of *Dampiera Marifolia* delight one with their vivid blue, and the dainty white flowers of *Anthrocercis myosotidea* are equally attractive.

Very prominent throughout the trip are the purple patches of the dwarf *Baeckia crassifolia*, yellow Hibbertias, and the ubiquitous *Helichrysum obtusifolium*.

At 51 miles we pass a forlorn-looking pump and the water in the well looks very unattractive.

Ridge after ridge makes the travelling interesting as the heated air causes the shrubs on their summits to assume all kinds of fantastic shapes. *Callitris verrucosa*, *tasmanica*, and *gracilis* are

PLATE XXVI



Calytrix Sullizanii, in Mallee country beyond Nhail.
Photo.: H. T. Reeves.



Blue Boronia (*Boronia carulescens*) with *Olcaria rudis*, in the North-western Desert.
Photo.: W. H. Nicholls.

noted, and this genus becomes more plentiful as we get nearer to Murrayville. At 61 miles we pass another bore which is just on the edge of the desert area, and the shifting sand area is gradually replaced by the red soil of the cultivated Murrayville wheat fields. But even these wheat fields have an occasional shifting dune of white sand, as if to remind man that "his control stops with the shore."

At 65½ miles we reach Murrayville, full of regret that our trip across the desert has ended. From a botanical point of view this journey from Yanac to Murrayville is second to none in the State, and it is hoped that after the war a made road will unite the towns of Nhill and Murrayville. At present none but an experienced driver should attempt the trip and a plentiful supply of water should be carried, as, apart from the Government bores, there is no surface water.

Sir Thomas Mitchell, when he discovered Victoria Felix, skirted the fringe of this area near Mount Arapiles, and, in fact, sent his second in command, Mr. Stapylton, to discover in what direction the River Wimmera flowed, but the arid nature of the country compelled him to turn back, leaving the question unsolved. Overlanders from Sydney and Melbourne to Adelaide avoided this area and to this day large portions of it are still unexplored.

An excellent account of the country traversed is found in *The Physiography of Victoria*, by E. S. Hills.

WESTERN AUSTRALIAN NOTES

I have just returned from a visit to Western Australia. Of course, the wild flowers were wonderful—indeed, they far exceeded expectations—but I was somewhat disappointed in the scarcity of the birds; there seemed to be very few in the forests and often these were completely silent at times when the eastern woods would have been full of the song and chatter of both big and little birds.

A point on which I should be grateful of information is the following:—When the guide was showing the Cave at Yanchep he displayed some human bones and skulls which had been found in the cave when it was first discovered. The guide informed us that at one time two tribes of blacks used to meet near Yanchep and there decide which of the old people were too old and useless. These old people were then thrust through a hole in the ground, which was really the roof of the cave, and there left to die, if the fall did not kill them. Is this story likely to be true? If it is not true, or is founded on very slight evidence, it does not seem at all just that that story is still being told to every party of sight-seers whom the guide takes through the cave. I asked the guide at the time, but realized that questions were not welcome. My reasons for doubting the story are first that I have lived in Queensland, and there saw a good deal of the blacks (though it is true that these were not wild blacks), and, secondly, that on the drive back to Perth from Yanchep an elderly man told me that he disbelieved the story, as he was a North Country landowner and had employed blacks on his station for fifty years, and it was quite unlike them so to dispose of the old members of the tribe.

FRANCES ESPERSON, Harrow (Vic.).

SCIENTIFIC COLLECTIONS: THEIR ROMANCE AND TRAGEDY

By FREDK. CHAPMAN, A.L.S. (LOND.), HON. PAL. NAT. MUS.,
Melbourne.

"You will no doubt see in your library my new book—'Where is the . . . Collection?'" So wrote my life-long English friend, Dr. Chas. Davies Sherborn, in March, 1940. Through war-time difficulties this book was received at our libraries a year later. To a layman its curt and forbidding title would offer no attraction; but to a Museum Curator, in any part of the world, tired of searching for the whereabouts of scores of scattered collections, nothing could be more acceptable.

The author of this present booklet is widely known amongst living naturalists as their greatest and most accurate compiler of natural history reference works of our time. For a large part of his working life Sherborn has given his time to the compilation of that zoological "Domesday Book," the *Index Animalium*. This monumental work was published in twelve large volumes, between the years 1902 and 1932, and contains more than half a million references, each of which had to be separately verified. It has been a godsend to those who have to deal with the priority of a species or genus, from the time of Linnaeus to the year 1850.

"Where is the . . . Collection?" is directly based on the card index on which Sherborn noted facts relating to natural history collections in every part of the world as they came under his observation before and during the time he was an accredited member of the British Museum staff, between 1880 and 1939. From the many notes of interest contained in this book I cull the following, which especially relate to Australian collections and collectors:—

Reference is made, on p. 147, to the collections of Julian E. Tenison Woods. During his vocation as a Roman Catholic priest, in the Mount Gambier district of South Australia, Tenison Woods found time to describe several hundreds of fossil corals and shell-fish. In those early scientific days, about the middle of last century, the safe-keeping of described types for future reference did not seem so important as at present, so that his collections of Australian fossils have been difficult to trace in future years. In his book, Sherborn notes only that part of the Woods' collection which was formerly housed in the Museum of the Geological Society of London. These collections have recently been removed from Piccadilly to South Kensington. The main Tenison Woods' collection, of which, however, no mention is made by Sherborn, is unfortunately scattered; though some of it, we understand, may be found in the Narracoorte Museum, South Australia, near the scene of Tenison Woods' religious life-work.

A note in this book relates to McCoy's early palaeontological work in England, before he came to Melbourne in 1856. These are the Coal Measure fossils from Australia which McCoy described about the year 1847, in the *Annals and Magazine of Natural History*. This collection is noted by Sherborn as deposited in the "Coll. Trinity Coll. Dublin" (p. 89). The brief reference to "Melbourne, Victoria," relates to the larger collections brought together by the late Sir Fredk. McCoy, including the types of his well-known *Prodromus of Palaeontology of Victoria*, as also that of his *Prodromus of Zoology*, which forms the backbone of the present National Museum collections in Russell Street, and which still has claim in its comprehensiveness to being the finest palaeontological collection in the Southern Hemisphere.

The far-sighted McCoy was always keenly interested in sales of fossils offered in England and Europe, and by stipulating with dealers that he should be supplied with early proofs of sales catalogues, was able to buy over the heads of the home directors of museums, to the enrichment of the Melbourne Museum. His persuasive powers with the Trustees were such that he had no difficulty in seeing his accounts settled in due course. Thus many treasures from Great Britain and Europe found their way to the National Museum. For example, the larger part of the Morris and Lycett collection of Jurassic fossils, including several types, were acquired for Melbourne; but, as Sherborn notes, their *Trigonias* (bivalved shell-fish) went to the Museum of Practical Geology in London, and the Eocene Ostracoda to the British Museum. Another valuable collection, from the cabinets of Dr. Wright, numbering several thousands of English Liassic Ammonites and Nautili, found its way to Melbourne. This is not noted by Sherborn.

In the early part of last century a gardener living at Scarborough in Yorkshire, William Bean, became famous as a collector of fossil plants from the Jurassic beds exposed in the cliffs at Filey. These included beautifully-preserved remains of ferns, conifers, fern-palms, leaves of the maiden-hair tree, and many others. This interesting flora is nearly comparable to that found in the coal measures of South Gippsland, so that we may imagine McCoy's interest in Bean's collection when it came into the market. A large part went to the British Museum, the Trustees, as noted by Sherborn, purchasing it for £500. Another portion went to Cambridge, and these two series were later described by Professor Seward. But a third series, purchased for Melbourne by McCoy, was not noted by Sherborn. It is a fine series and thoroughly representative of the Jurassic Yorkshire flora, and as such has been recorded by Chapman in his *Guide to the Museum* of 1929. When Sir Albert Seward, who monographed this flora for the British Museum, visited Melbourne with the British Association in 1914, he examined a portion of this collection with the writer, intending

to pay it another visit; in the meantime an ephemeral luncheon intervened, with a golden opportunity lost.

Turning to the romantic side of collecting, many are the collectors who, by their enthusiasm, have made history by their intense love for their hobby. These enthusiasts crop up in the most unexpected places and many such are referred to in Sherborn's notes. Amongst these, William Gamble (p. 55) concentrated on collecting and studying the sea-mats and lace corals, and his valuable collections are now safely housed in the British Museum at South Kensington. He played many parts, being in turn a soldier, a warder at Chatham Convict Station, a grocer, and finally a pensioner at Battersea (in 1911). Also recalled in this book is Robert Dick, the baker, botanist, poet and geologist of Thurso. His collections of fossil fish are to be found in the Edinburgh Museum of Science and Art. Dick's generosity to the museums of his day often forbade him to seek an equivalent for his work in obtaining the fossils. He had a penurious existence and died in debt.

A note in Sherborn's book (p. 89), reads:—"A fossil fish type had been blackleaded and used as a doorstep, but is now cleaned and in the B.M." (British Museum). This is reminiscent of a record about the handsome type-specimen of the Giant Club-Moss (*Lepidodendron*), which, as the late Dr. T. S. Hall relates, was doing duty for some time as a doorstep in a Carlton shop.

Few of us had heard of the tragic fate of the collection made by the well-known Yorkshire geologist, Professor John Phillips, but Sherborn recalls the incident in his book as follows:—"When P. came to London he put up at 'La Belle Sauvage Inn' and in the night the whole of his fossils which were packed in boxes, were stolen by thieves, who suspected the boxes contained plate. On discovering their error the thieves threw the collection over Blackfriars Bridge into the Thames, where it remains."

A fitting climax to an account of the numerous entries of more or less startling interest related in the unofficial card index by the compiler of the great work, the *Index Animalium*, may be found on p. 61, anent the quick-change artist in the social-scientific world of about eighty years ago, viz., Chas. Ottley Groom. He "became successively Groom-Napier, Duke of Mantua and Montferrat, Prince of Mantua, Prince of the House of David. Claimed to be a 'Palaeologos.' Warned off the B.M.; said to be dead many times; law case before Sir Geo. Jessel. Sold false nuggets to Ruskin. Had no types. Founded Mantuan Gold Medal of which Owen's specimen is in the B.M. (N.H.). His alleged pedigree is in the Cornhill Mag. September 1912. . . . Was a notorious rogue and thief; tried to kill Thomas Davies by dropping a boulder upon him from a high ladder in Tennant's shop in the Strand."

THE TREE-EVERLASTING (*Helichrysum ferrugineum*, Less.)

By J. H. WILLIS, National Herbarium, Melbourne.

Looking through sheets of specimens in any large Herbarium where types are preserved, one often stumbles upon the handwritten remarks of departed botanists, penned no doubt in all seriousness yet affording many a smile to the systematist of later generations.

I have just turned up a sprig of our giant *Helichrysum* or "Tree-everlasting" collected by Baron von Mueller in 1853. J. J. Labillardiere's original epithet (he procured the type in southern Tasmania, 1792) apparently annoyed the Baron, who writes against his own specimen, "I reject the specific name '*ferrugineum*' in as much as the plant is seldom . . . a brownish hue"; and then, as if to placate the great French botanist for having doubted his wisdom, Mueller appends the name "*Helichrysum Billardieri*"! But the Baron was always a law unto himself in matters nomenclatural. Nowadays, no one is at liberty to reject or change a validly published name on the mere plea of ineptitude.

The fact remains, however, that Labillardiere's designation of *ferrugineum* is not at all appropriate. In no specimen have I seen anything like a rust-coloured vestiture—at best it is cinereous—and Hooker credits the plant with a "white tomentum."

Typical *H. ferrugineum* is an almost universal constituent of mountain fern gullies where growth is rapid and large size attained—heights of 15 feet with diameter of 6 inches and more are common in the Dandenong Ranges. In exposed situations, as on the coast, the foliage tends to become dwarfed; along the Great Ocean Road south of Lorne a stunted form of the Tree-everlasting has very short leaves, and it is striking to note how many heath-like shrubs of the Otway coastline have developed unusually broad leaves, e.g., *Leptospermum scoparium*, *Melaleuca squarrosa*, *Olearia ramulosa* and *Hibbertia ovata*. The short-leaved form is common in parts of Tasmania (Southport, etc.) and, although of doubtful varietal worth, it could be distinguished as *forma parvifolium* (a manuscript name on one of Mueller's sheets).

Dr. B. P. G. Hochreutiner (Geneva Botanic Gardens, in *Candollea*, vol. 5, 1934, p. 316) has established a new species, *H. pseudoferrugineum*, his type coming from the Blacks' Spur near Healesville, where true *ferrugineum* is abundant. He describes the new species as a shrub 6-10 feet, "whereas the plant of Labillardiere is a little herb ('orgyalis')." Now, surely Dr. Hochreutiner is at fault in his interpretation of Labillardiere's term, *orgyalis*, which botanists of all time have used to denote the stature of a man (i.e., about 6 feet); our Tree-everlasting is no "little herb," except in its seedling phase. Nevertheless, his

specimen of *H. pseudoferrugineum* exhibits a type of involucre bract unrepresented among collections at the Melbourne Herbarium, viz., even, ellipsoid, glabrous and almost wholly white, never with a hairy, long, green claw and crenulate, expanded tip as in *ferrugineum*, so it would seem that Hochreutiner's species must be kept distinct, unless it can be proved an aberrant form of the latter.

It remains to mention a well-defined variety of Tree-everlasting, which Leonard Rodway alone has recognized; his variety *Gravesii* is remarkable for exhaling a delicious cinnamon-like odour (even when dried for several years) and on that account would merit the vernacular name "Fragrant Everlasting." This was collected first in Tasmania by Mr. T. W. Graves during the 'seventies, but is known to occur also on the easterly islands of Bass Strait (Furneaux and Kent groups), in eastern Victoria (Nowa Nowa, Snowy and Ingeegoodbee Rivers) and in New South Wales, without precise locality. The type description in *Flora of Tasmania*, 1903 (p. 89), is sketchy—"Erect, very much branched and spreading. Leaves rusty beneath, scented."—and again attributes a ferruginous character to this *Helichrysum*. As a matter of fact the type specimen of *Gravesii* (in Melbourne) is not at all rusty, albeit yellowed somewhat with age, and fresh samples from East Gippsland show a distinctly pale tomentum on the under side of the leaves, contrasting with the bright green above. The broadish, scented foliage is rather sticky, stiffer and more thickly textured than typical *ferrugineum*, and suggests a transition to *H. Stirlingii*, that magnificent alpine species of the Ovens watershed.

NESTING OF WAGTAILS

At the present time Willie Wagtail parents are feeding their third brood—hatched in the same nest—in this garden. There were two nestlings in the first clutch and three in the second. I do not know how many are in the third as the nest is high and they are not yet visible. In each instance the nest has been cleaned, and deepened by the addition of more cobweb to the rim. Its shape for the third clutch, high and with straight sides, resembled a marmite jar.

It has been delightful to have these birds about the garden, and to watch a parent teaching a youngster how to "handle" a butterfly. It would dance attendance, probably proffering advice, while the youngster swung absurdly from side to side in order to get a long leverage for its feeble blows. Then the parent would remove the insect and demonstrate how it should be done, and the baby would try again.

Hearing alarm calls at 3 o'clock one morning, during the first brooding, my daughter arose and found a 'possum with its nose at the nest. With torch and small missiles she was able to drive it off. At 7 a.m. a parent was sitting on the eggs. She then fixed a piece of wire-netting at the base of the horizontal bough which effectively blocked the 'possum and evidently inspired the birds with confidence.

EDITH COLEMAN, Blackburn (Vic.).

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EXCURSIONS

SATURDAY, FEBRUARY 7.—Seaholme. Subject: Shore Life. Leaders:
Mr. and Mrs. J. J. Freame. Train from Flinders Street at 2.15 p.m.
(Altona line, change at Newport.) Fare, second return, 1/2½.

SATURDAY, FEBRUARY 14.—Domain. Subject: Eucalypts. Leader:
Mr. C. H. Shewan. Meet at "The Palms" at 2.45 p.m.

SATURDAY, MARCH 7.—Botanic Gardens. Subject: Trees and Shrubs.
Leader: Mr. J. H. Willis, B.Sc. Meet at the Herbarium Gate at 2.45 p.m.

THE CLUB'S PUBLICATIONS

VICTORIAN FERNS, by Richard W. Bond, should be in the hands of all fern-lovers, as it contains descriptions of every fern known to occur naturally in our State, tells where to find them, how to identify them, and how to grow them. Price, 2/-.

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MARCH, 1942



THE

Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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1942

Field Naturalists' Club of Victoria

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA STREET,
MELBOURNE, C.1.

BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, MARCH 9, 1942

1. Minutes.
2. Subject for the Evening—"Soil Conservation," by Mr. H. G. Strom
(Chairman Soil Conservation Board). Illustrated by the
Epidiascope.
3. Correspondence and Reports.
4. Election of Members.

AS ORDINARY MEMBERS	PROPOSER	SECONDER
Miss Anna Martin, c/o Mrs. Barr, 22 Leamington Terrace, Caulfield.	Mr. L. W. Cooper.	Mr. F. S. Colliver.
Mr. Lex Fuauux, 1, Broadway, Camberwell.	Mr. Noel Lothian.	Mr. F. S. Colliver.
5. Nominations for Membership.
6. General Business.
 - (a) Forthcoming Excursions.
 - (b) Questions by Members.
7. Remarks by Exhibitors.
8. Conversazione.

The Victorian Naturalist

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No. 699

PROCEEDINGS

The monthly meeting of the Club was held on Monday, February 9, 1942, at 8 p.m. The President (Mr. P. Crosbie Morrison) presided, and about 90 members and friends attended.

CORRESPONDENCE

A letter from Dr. Flecker, of Cairns, North Queensland, congratulating the Club on the Fungi Book.

REPORTS OF EXCURSIONS

Reports of Excursions were given as follows:—Belgrave, Mr. A. J. Swaby; Altona, Mrs. Freame.

ELECTION OF MEMBERS

The following were elected:—As Ordinary Member, Mr. Thomas Griffiths; as Country Member, Mr. Clifton Cappie Towle; as Associate Member, Master John Maughan.

GENERAL BUSINESS

Mr. A. H. Chisholm, on behalf of Mr. F. Chapman, brought before the meeting the matter of electing Sir Edmund Teale to Honorary Membership, and moved that the recommendation of the Committee to this effect be agreed to. This was seconded by Mr. A. D. Hardy and carried by acclamation.

DONATIONS

The President announced that copies of *Furred Animals of Australia*, by E. L. Troughton, and *Strange New World*, by A. H. Chisholm, had been received for review. He congratulated Mr. Chisholm on writing such an admirable book.

QUESTIONS BY MEMBERS

(a) Is anything to be gained by planting seeds, etc., in the so-called fertile phases of the moon?

Ans.: No; this is merely superstition.

(b) A question on the subject of Black-backed and White-backed Magpies was discussed by several members. (See paragraph in this issue.)

SUBJECT FOR THE EVENING

Mr. Charles French, former Government Biologist, gave a most instructive address on "Native Insects that have become Pests," accompanied by coloured lantern slides showing the life-histories of about 40 species. (See article in this issue.) Members were closely interested, and Mr. French was cordially thanked for the information given, both in the address and in reply to questions.

SPECIAL NOTE

The President announced that at the next General Meeting a trial A.R.P. evacuation would be made.

EXHIBITS

Mrs. M. E. Freame.—Marine specimens, including Elephant Fish and Duck-bill Shield Shell from Torquay; Sea Hare and egg-mass from Sorrento; Sea Cucumbers from Altona.

Mr. E. E. Pescott.—N.S.W. Christmas Bush (*Ceratopetalum gummiferum*).

Mr. A. D. Hardy.—Out-size in grass and pond weeds.

Mr. R. G. Painter.—Eighteen species of cultivated indigenous plants, comprising: *Ajuga grandiflora*, *Calanthe veratrifolia*, *Crotalaria laburnifolia*, *Didiscus coeruleus*, *Eucalyptus calophylla* var. *rosea*, *E. platypus* var. *purpurascens*, *Hibiscus Huegelii* var. *Wrayii*, *Humea elegans*, *Isotoma petraea*, *Ixolaena leptolepis*, *McLaleuca lateritia*, *M. nesophila*, *Prostanthera aspalathoides*, *Scacvola aemula*, *Sollya fusiformis*, *Swainsona galegifolia*, *Thomasia petalocalyx*, *Sarcophilus Cecileae*.

HEALESVILLE NOTES

I regret to say that the West Australian numbat, which I saw during a recent visit to Healesville, and which thrived for three months in the Tropical House at the Badger Creek Sanctuary, has died. This rare and agile little animal had a prodigious appetite—for white ants only. With its long tongue the numbat would scoop ants by the thousand out of rotten logs. This remarkable creature looked as though it had somehow acquired a bird's feather for a tail.

A full-grown miniature goanna from Queensland, only 18 inches long, is still very much alive at the Tropical House. This small reptile walks and runs just like an "old man" goanna, but it is far more graceful than are the larger species. It will kill and eat a mouse.

Incidentally, Jill, one of the three Sanctuary duckbills, will, if all goes well, soon surpass the record held by Splash for longevity in captivity.

Splash, it may be noted, had been in captivity 1,484 days when he died in March of 1937. In that period Mr. Eadie's famous pet ate three-quarters of a ton of food, including 1,500 lbs. of earthworms, 2,500 hen eggs, and countless thousands of tadpoles. On the day of his death he entertained 132 visitors, and it is estimated that during his lifetime he was inspected by more than 12,000 admirers.

J. MOLLISON.

NATIVE INSECTS THAT HAVE BECOME PESTS

By CHARLES FRENCH, Retired Victorian Govt. Biologist,
Melbourne.

(Summary of an address delivered to the Victorian Field Naturalists' Club on Monday, February 9, 1942.)

Owing to the destruction of so much of the original native vegetation to make room for the growth of towns and the orchards and gardens attached thereto, many of the native insects which had previously lived on these plants have turned to the introduced plants, very much to the detriment of these plants, particularly those of the fruit orchards and house gardens.

Some of these insects feed on the leaves and fruit of the plants; others suck the sap; others again bore into the branches and roots. In most cases it is not the butterfly, moth or beetle itself that does the damage, but the larva or caterpillar.

Among these pests are the following:—

Apple-root Borer (*Leptops squallidus*) (Hopei). Native to many kinds of Acacias, but has taken among others to apple and peach trees. It is a grey weevil which lays its eggs on the leaves; the edges of the leaves are then glued together, and the legless larvae when hatched drop to the ground without the aid of a thread, and burrow into the ground to a depth of six to seven feet, even in the hardest soils; here they eat a series of grooves in the surface of the roots and may stay for a period of up to four years. They are very destructive, not only to apples, but also to pears, apricots, vines and cherries. The remedy is to spray the tree in September (when the insects are coming up out of the ground) with arsenate of lead. Zinc bands placed around the stem of the tree prevent the insects climbing up to the leaves. When a tree is attacked by this borer it becomes affected with a type of "die-back," then puts up suckers from the roots, and eventually dies.

Cherry Borer (*Maroga unipunctata*). Native to many Leptospermums and Acacias. The moth is cream-coloured with one dark spot on each upper wing, the lower wings being dark grey; it is about 1½ inches across. The eggs are laid on the sides of the branches, and the larvae when hatched bore into the centre of the branches, leaving a mass of sawdust-like material on the outside of the branch. The larva grows to about 1½ inches and has a dark head and a grey body. The remedy is to remove the sawdust-like material so as to expose the mouth of the tunnel, then to place in the tunnel a piece of cotton wool that has been dipped in carbon

bisulphide or carbolic acid, and to cover this with clay or soap; the fumes of the carbon bisulphide or the carbolic acid kill the larva. Sometimes the larva can be killed by probing the tunnel with a piece of stout wire. On one occasion a whole row of street trees in Hawthorn was killed by this borer. It has been recorded on cherries, quinces, apricots, peaches, plums, pears, apples, loganberries and raspberries.

Cypress Borer (*Diadoxus scalaris*). Native to our pines (*Callitris* and others) and has done great damage to Cypress hedges, boring into the roots and killing the plant. The remedy is the same as for the Cherry Borer.

Elephant Beetle (*Orthorrhinus cylindrostris*). Native on dead and dying Australian timbers, but occasionally is found on living trees. It has now taken to almost all kinds of fruit trees, and to many street trees; a whole row of tamarix trees at Altona was wiped out by it. The adult insect is a typical weevil; it has a long snout and the fore legs are very much longer than the hind legs. The eggs are laid in the bark of the tree about a foot or so from the ground, and the larvae tunnel into the limbs. The remedy is the same as for the Cherry Borer.

Cherry Green Beetle (*Diphucephala colaspoides*). Native on various Leptospermums and has now attacked most kinds of fruit trees. On one occasion the branches of an apple tree at Gilderoy, near Powelltown, were so loaded with this beetle that they were bent down to the ground. It has also attacked the roots of strawberry plants in the Dandenong Ranges and destroyed many plants.

Pumpkin Beetle (*Aulocophora hilaris*). Native on native Cucurbits and has now begun to attack the foliage of introduced plants such as the pumpkin. The remedy is to dust the plants with derris dust or nictar dust or to spray with arsenate of lead.

Painted Apple Moth (*Orgyia anartoides*). Native to many kinds of Acacias, but has also been found on eucalypts. The larvae are very destructive to apple and other trees, eating out the fruit spurs. They also attack many kinds of garden plants; the female will lay as many as 1,000 eggs in a season. The remedy is the arsenate of lead spray.

Light Brown Apple Moth (*Tortrix postvittana*). Native to Acacias but has taken to various cultivated native plants such as *Correa*, *Boronia* and *Grevillea robusta*, and to almost all kinds of fruit trees and to most garden plants. The larvae, which do all the damage, roll the leaves together and hide in them, coming out at intervals to eat other leaves. The remedy is the arsenate of lead spray.

Emperor Gum Moth (*Antherea eucalypti*). This insect, which originally confined its attacks to the eucalypt, has taken to the pepper tree and to almost all the fruit trees and many street trees. It is now recorded on some 21 types of ornamental trees. As everybody knows this moth and the pretty green caterpillar, no description is necessary. The remedy is the arsenate of lead spray.

Wattle Goat Moth (*Zeuzera eucalypti*). This is found in its native state on various Acacias, particularly *A. decurrens* and *A. longifolia*. The eggs are laid in crevices in the bark and the larvae tunnel into the wood, eating their way downwards into the roots; they grow up to five inches in length. They are found in peach, apricot and plum trees. The remedy is the same as for the Cherry Borer.

Mottled Cup Moth (*Doratifera vulnerans*). Native to many kinds of eucalypts, but lately has done much damage to fruit trees, the fruit spurs being especially favoured for food. The larvae have stinging spines which can cause great irritation when handled. A weak solution of ammonia relieves the pain. The arsenate of lead spray keeps the pest in check.

Snout Moth (*Pinara cana*). This native insect formerly fed on Acacias, but has now taken to the apple tree. The eggs are yellowish and the larvae so closely resembles the greyish-green of the tree that it is almost impossible to see it. The upper wings of the moth are a deep yellow, the lower being of a light reddish-yellow colour. When fully grown the caterpillars roll the leaves of the tree and make in them a whitish cocoon, about an inch in length. The male is much smaller than the female, but each has a snout-like appearance of the frontal part of the head. These insects not only strip the tree of its leaves but also destroy the young buds and shoots. Remedy: spray with arsenate of lead.

Bean Butterfly (*Ziseua labradus*). Once native on native Legumes, this very common, small, blue butterfly lays its eggs on French and other beans, and as soon as the young caterpillars are hatched they commence to bore into the pods and soon eat out the beans; the pods then become yellow and shrivel up. The larva of this insect is greenish, and in shape not unlike the common slater. The remedy is to spray with arsenate of lead.

Woolly Bear (*Diacrisia canescens*). Found on native grasses. The caterpillar is brown and very woolly. It does great damage to roses and to garden plants of all descriptions. The remedy is the arsenate of lead spray.

Processional Caterpillar (*Ochrogaster contarinia*). This caterpillar is native on various Acacias but has now taken to apple

trees. It can be controlled by the arsenate of lead spray. The caterpillars build a nest of leaves suggesting a small golden-coloured bag which is filled with fine spines cast off in moulting. These spines are very dangerous to the eyes, causing temporary blindness. Great care should be taken in handling the nests, and children in the Mallee and Wimmera districts, where these nests occur, should be warned not to touch them.

Cut Worms. These are of many different species, which occur native on grasses, but have now taken to attacking vegetable and garden plants and fruit trees. Some larvae hide just under the surface of the ground during the day-time, coming out at night to feed on the leaves and buds. The remedy is to spray the plants with arsenate of lead, or to lay poison baits of calcium arsenate and bran at dusk, just before the cut-worms come out to feed.

Looper Caterpillars. There are various species of these; they are native to different kinds of Acacias, but have appeared on apples, pears and grapes. The arsenate of lead spray keeps them under control.

Orange Butterfly (*Papilio anactus*). This has probably come to Victoria from New South Wales, where it is native on plants of the Rutaceae. It is very destructive in Citrus orchards, but can be kept in check by the arsenate of lead spray. Certain ichneumon wasps parasitize the larvae and so help to keep the numbers down.

Caper Butterfly (*Anaphæis teutonia java*). Native on many plants near the River Murray, capers, etc., but has come down to Southern Victoria and is proving a pest on orange and other fruit trees and on fuchsias and other garden plants. Remedy, spray with arsenate of lead.

Green Grass Caterpillar (*Oncopera rufobrunnea*). The larvae of this insect are dark green in colour and about two inches in length; they are very active and do great damage to lawns. They can be controlled by spraying the lawns with arsenate of lead or by laying poison baits of calcium arsenate and bran.

Harlequin Bug (*Dindymus versicolor*). Originally confined to the native Malvaceae, but has now spread to apples, figs, pears, almonds, raspberries, red currants, gooseberries, apricots, peaches and many flowering plants; also to potatoes, tomatoes, lettuces, etc. By puncturing the fruit the insects cause it to become unpalatable. A spray of 1:25 of "Clensel" is the best means of eradicating it.

Rutherglen Bug (*Nysius vinitor*). A very small insect, about one-sixth of an inch long, but has done an immense amount of damage to potatoes, grapes and peaches. The remedy is derris dust, nicotine, benzol emulsion, nictar dust, or any other contact

spray. "Clensel" 1: 25 is excellent. Benzol emulsion is also recommended.

Holy Bug (*Mictis profana*). A bug about one inch long with a yellow St. Andrew's cross on the back; the back legs are much longer than the front. It is native on some kinds of Acacia and has become a pest on cultivated Acacias. The remedy is the same as for the Rutherglen Bug.

Wattle Mealy Bug (*Dactylopius acaciae*). Appears on Acacias, especially in cultivation. It sucks the sap, then die-back sets in and the plant dies. The remedy is white oil or red oil sprays.

Cottony Cushion Scale (*Icerya purchasi*). This is a very common scale on Acacias in cultivation, and also on citrus fruits and Pittosporums. It has a white cottony covering on the back, corrugated, and is red underneath. It is best controlled by the white oil or red oil sprays. At one time the citrus orchards in California were threatened with destruction by this scale and entomologists visiting Australia found that certain "ladybirds" attacked the scale, particularly *Vedalia*, *Orcus* and *Rhizobius*. These were taken back to America and liberated; the scale was completely wiped out.

Stick-Case Insects (*Entometa* sp.). These are native on different plants, but now attack citrus trees, cypress hedges, etc. The arsenate of lead spray will keep them under control.

In many cases there are parasitic wasps, ichneumons, chalcids, various flies, ladybirds, and other insects, also insectivorous birds, which play a large part in keeping the different pests under control.

HOW TO SHOOT FOXES

A recent question regarding foxes may be answered by a reference to the experience of Mr. E. W. Miller, of Richmond, runner-up in the King's Prize in 1917, who shot 71 foxes in little more than two months (winter) in the foothills near Strathbogie. As many as 86 foxes were seen during one trip.

Decoys brought 47 of the foxes within range. They are made by Mr. Miller and are used to imitate the squealing of a rabbit, bark of a fox and bleating of a lamb.

Mr. Miller says that his success was due to a rigid observance of the following rules:—

Make sure the fox is within range, as it will never return to a decoy after being fired at; keep quiet; do not smoke; always wear rubber shoes and eliminate any flapping clothes; remain perfectly still when once in position; do not work more than three-quarters of a mile of country at a time; use No. 1 or No. 2 shot or a good rifle; watch the movements of birds such as magpies—they attack foxes—and parrots and cockatoos, which scream when they see a fox; nail skins out to dry within 24 hours of shooting.

AN ARRANGEMENT OF STONES AND SOME ROCK
DRAWINGS

By C. C. TOWLE, B.A., Sydney

During the month of September, 1941, Mr. J. A. Cole of Nowra, N.S.W., guided me to the site of a stone arrangement of the aborigines which his father, Mr. W. H. Cole, had located some months previously (Plate XVII: 1). The arrangement is situated on the eastern side of Mundamia Creek, five miles south-west of Nowra, and one mile north of the road from Nowra to Bamarang and Yalwal. It consists of 85 stones, and forms an enclosure 72 feet in length and 10 feet in width except at the ends, which widen out, the south end to 12 feet and the north end to 18 feet (Fig. 1). The long axis of the arrangement lies almost due north and south. The highest point of the Cambewarra Range, which is several miles away, is almost due north.

The arrangement is situated 200 yards from the creek and has been placed on a gently sloping surface of the ground. It is partly hidden in the long grass which covers the hillside. Only a few trees, small in size, are growing near the arrangement.

All the stones in the arrangement have been gathered from the several sandstone outcrops nearby. Most of them are from 12 to 18 inches in size. They have been left undisturbed for such a long time they are now firmly embedded in the soil, many of them to a depth of several inches. There is no reason to doubt that they had originally been placed on the surface on the ground. At the first inspection some difficulty was experienced in readily tracing the outline of the arrangement, not only because the stones were so deeply embedded, but also because of the long grass (Plate XVII: 2).

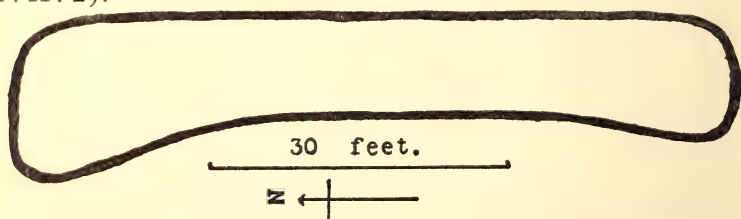


Fig. 1. Ground plan of the stone arrangement.

The plan of the arrangement is very simple: it is merely an enclosure. Some of the stones, especially those at the ends, have been displaced, but the original outline of the arrangement is quite clear. The stones on the average are two feet apart. There are no stones within the enclosure.

Soon after the discovery of the stone arrangement, Mr. J. A. Cole made a search of the vicinity and located some further sites associated with the aborigines.

PLATE XVII



1



2



3

1. View of stone arrangement from south end, with long grass removed. 2. Some of stones forming arrangement partly hidden in grass. 3. Tree from which a sheet of bark was removed by aborigines.

In a rock shelter on the opposite side of the creek, 250 yards to the north-west of the stone arrangement, there is a small series of pictographs. There is a second and much larger series in a rock shelter 700 yards north of the stone arrangement, on the bank of the Shoalhaven River near its junction with Mundamia Creek.

The pictographs on Mundamia Creek have been done in white. They consist of a stencilled hand marking, a drawing probably intended to represent a human figure in dancing posture, and another drawing the significance of which is not clear. The human figure is $4\frac{1}{2}$ inches in length.

The pictographs on the Shoalhaven River consist of 28 hand markings done in white by the stencilling method, six hand impressions in solid red colour, the drawing of a fish 22 inches in length, and two other drawings, of which one is somewhat T-shaped, the other is indistinct. Many of the hand markings show part of the forearm.

Mr. J. A. Cole has also located a tree from which bark has been removed by the aborigines (Plate XVII: 3). It is situated on the bank of Mundamia Creek, 250 yards north of the stone arrangement. The present appearance of the tree indicates that a sheet of bark $11\frac{1}{2}$ feet in length and more than 2 feet in width was removed from the tree very many years ago. The bark of the tree has since formed a thick bulge along each side of the opening. Howitt¹ states that bark was stripped from trees and used during initiation ceremonies which he himself attended on the South Coast of N.S.W.

The Significance of the Stone Arrangement and of the Pictographs

There cannot be any serious doubt that the stone arrangement and the pictographs near Mundamia Creek had significance in the secret life of the aborigines of that place. We do not know whether the sites described were devoted to the carrying out of totemic rites, or were used primarily for initiations. Further, we do not know whether they were connected with the same set of ceremonies, but their proximity would suggest that they had some kind of inter-relationship.

Most of the published evidence concerning the ceremonies held in South-East Australia has been in connection with initiations. If other ceremonies of comparable importance were held on the South Coast of N.S.W., they have not been recorded. Increase rites² connected with local totem-centres have, however, been recorded in the north-east of N.S.W.

Concerning the initiation ceremonies, there is abundant evidence

that enclosures in the form of circles or ovals were in general use in many parts of South-East Australia. Usually they were formed by a mound of earth, sometimes by logs³ or bushes. In 1795, Collins⁴ witnessed initiation ceremonies at Port Jackson which were carried out within an oval formed by a mound of earth. In later years, Mathews,⁵ Fraser,⁶ Howitt⁷ and others either witnessed or reported initiation ceremonies in which enclosures were formed in the same manner. These writers⁸ have also described the anthropomorphic and zoomorphic earth figures, tree markings and other objects, which were as necessary to the carrying out of the ceremonies as were the oval and circular enclosures.

The stone arrangement and the pictographs near Mundamia Creek may also have formed a similar series of sacred sites in the local ceremonies.

Other Stone Arrangements and Pictographs near Nowra

On Endrick Mountain,⁹ 50 miles south of Mundamia Creek, there is a series of stone arrangements which are much more elaborate in plan than the arrangement at Mundamia Creek. One arrangement in the series is oval in form and 55 feet in length.

Rock carvings have not been reported, but rock paintings, in addition to those already described, have been located in several parts of the Nowra and the surrounding districts, including three sites near Nowra, one at Bomaderry, one at Quiera, one at Jerrawangala, two at Abraham's Bosom, and two north of the lighthouse at Point Perpendicular, Jervis Bay.

Acknowledgments

I desire to thank Mr. J. A. Cole for his kind assistance. Mr. Cole has located all the rock paintings which I have mentioned except the site at Jerrawangala. For information about that site, I have to thank Major J. H. Sturgiss of Lower Boro.

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7. *op. cit.*, p. 519.
8. Howitt, A. W. (e.g.) *op. cit.*, pp. 523, 540, 553.
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NOTES ON VICTORIAN RHAMNACEÆ—PART I

By J. H. WILLIS, National Herbarium, Melbourne

An Undescribed Species of *Pomaderris*

Gross misdeterminations are sometimes made by systematic botanists in dealing with plants of diminutive floral structure. The Buckthorn family, *Rhamnaceæ*, has not escaped some confusion in this regard, and I here purpose to establish the validity of a long-unrecognized *Pomaderris* species from the north-east of our State.

James Stirling delivered to the Royal Society on April 20, 1882, a paper entitled "Phanerogamia of the Mitta Mitta source basin," restricting his remarks "to species verified by our eminent botanist Baron von Mueller." Under the Rhamneæ, he cites "*Spyridium parvifolium*, F. & M.—along margins of Livingstone Creek; on quartzite schists, near Omeo; 2,200 ft. I have not noted any higher than this." Stirling's identical specimen is preserved at the National Herbarium and clearly has nothing to do with our familiar "Dusty Miller" (*S. parvifolium*)—it lacks the condensed inflorescence subtended by floral leaves, and pouch-like petals enclosing the stamens.

During the same year, A. W. Howitt collected this plant again at Stuart's Creek in the upper Tambo watershed and forwarded a sample to the late Baron von Mueller, who labelled it "*Pomaderris vacciniifolia*" and placed it in his folder for that species. A glance at the velvety leaf surfaces and villose hairs on the calyces, which have basal tubes as long as their lobes, is sufficient to dissociate Howitt's plant from true *P. vacciniifolia*—perfectly smooth upper surfaces on the leaves, and exceedingly short calyx tubes which bear a close stellate tomentum.

Nearly half a century passes before we hear again of this intriguing plant, when H. B. Williamson re-discovered it at Biggara on the upper Murray (November, 1928), just in time for Professor A. J. Ewart to incorporate the record in his "Flora of Victoria," 1930. Unfortunately, Ewart could not have examined the perfect flowers, for he assigns Williamson's collection to "*Pomaderris cinerea*"—a N.S.W. plant with very small, apetalous flowers having much abbreviated, non-villose calyx tubes; indeed, the only point of resemblance between the Biggara *Pomaderris* and *P. cinerea* is the manifestly hoary indumentum of both, dorsal and ventral leaf surfaces being ashen-grey.

Early this summer the misunderstood and much-named shrub has again come to notice—once more from near Omeo (Miss S. M. Fawcett, Botany School) and also from an entirely new locality, the Ovens River between Bright and Porepunkah (Assistant Forester L. R. Dudley, who says, "exceedingly rare"). Without



Pomaderris velutina, sp. nov. (2) and the two near congeners,
P. phillyreoides, Sieb (1) and *P. linigera*, Sims (3).

Photo.: H. T. Reeves, from material in the National Herbarium.

question, we are considering a *Pomaderris* of the petalate series, but one that will fit no existing description. Benthams "Flora Australiensis" treats the Rhamnaceæ in vol. I (1863)—twenty years before Stirling's first Omeo record—so that no help comes from the pen of that perspicacious botanist.

The individual flowers are a smaller likeness of *P. lanigera*, Sims (though never so numerous, dense, nor so prominently terminal), but the foliage is quite dissimilar: pale and velutinate on both surfaces, with none of the coarser, rust-coloured hairs so conspicuous in *lanigera*; each leaf is broadly elliptic, obtuse, and rarely exceeds an inch in length, whereas those of *lanigera* are almost lanceolate and 1-4 inches long. The inflorescence is almost identical with that of *P. phillyreoides*, Sieber, but this species has the narrower leaves glabrous above, with smaller, thicker stipules. In habit the new species is a slender riparian shrub, 2-6 ft. high, with the foliage sparse and absent from the lower portions. By reason of its constantly velvet leaves, I apply the specific epithet "*velutina*" and the vernacular "Velvet Pomaderris."

In accordance with International Laws of Nomenclature, the necessary Latin diagnosis follows:

POMADERRIS VELUTINA, sp. nov.

Frutex gracilis, orgyalis vel minor (60-180 cm.), tenui pallido tomento, manifeste canescens; foliis sparsis, maxime in superiore parte existentibus, 2-3 cm. longis, late ellipticis, obtusisque, ex utraque parte tenuiter velutinis, infra albis; calycis villosis; petalis præsentibus; floribus minus congestis et minoribus quam flores P. lanigeræ, secus vix ab illis differentibus, cui plantæ hæc valde affinis est. Page 176.

Observed Distribution

Headwaters of the following rivers:—

Ovens (between Bright and Porepunkah, L. R. Dudley, 1941, TYPE).

Murray (Biggara, H. B. Williamson).

Mitta Mitta (Livingstone Creek, near Omeo, J. Stirling and Miss S. M. Fawcett).

Buchan and Ingeegoodbee (W. Hunter).

Tambo (Stuart's Creek, A. W. Howitt).

AN EARLY BIRD-MAN

I have just seen Mr. A. H. Chisholm's article, "An Early Victorian Bird List," in the *V.N.*, September, 1941, and think a few further notes may be of interest. Before coming to Australia John Cotton published two small illustrated works, "Song Birds of Britain." He reached Port Phillip in the *Parkfield* early in 1843, and commenced to paint the natural history objects found in the vicinity of his sheep station on the Goulburn River near Yea. He had intended to publish the plates in book form, but before he could do so he died. The plates were never published and, in 1931, were still in possession of one of his grand-daughters. That is all I know regarding him. In the List published, Cotton introduced about nine "new" scientific names, but they are mostly *nomina nuda*.

H. M. WHITTELL, Bridgetown (W.A.).

AN INTERESTING CALADENIA

By W. H. NICHOLLS, Melbourne

Caladenia pallida, L'dl.¹

This beautiful late-flowering spider-orchid at Goldenhue was commented upon by the Rev. H. M. R. Rupp in this journal just over 12 months ago.² This writer's remarks are accompanied by a line drawing of Lindley's species, but owing to the figure having been drawn from herbarium material, the result hardly does justice to this lovely flower.

Rupp suggests (and I agree) that this *Caladenia* be recognized as a valid specific form. Bentham³ includes this form as "a slight variety of *C. Patersonii*," but his inference is quite understandable, for his oft-tentative conclusions are based on the examination of dried specimens. Some other of his included *Caladenia* forms are now rightly established as independent species. However, in his accompanying remarks Bentham makes full allowance for his inclusion of these.

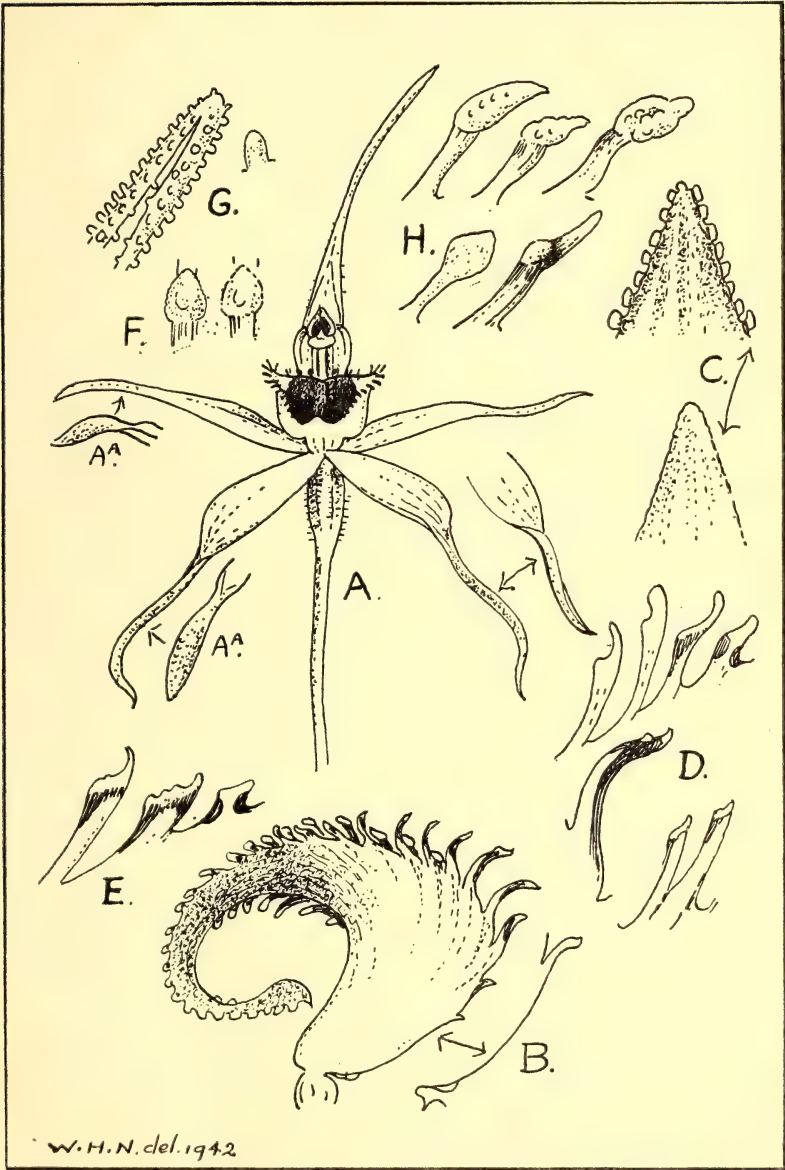
C. pallida is not an uncommon "Spider" in Victoria, it having reached me from the following districts:—Ringwood-Bayswater (A. B. Braine), Warburton (A. B. Braine), Cravensville (A. B. Braine), Lorne (per A. B. Braine), Lockwood-Tecoma (W.H.N.), Airey's Inlet (Miss M. Sutherland), Gorae West (Cliff Beaglehole), Goongerah (W. Hunter), Hurst's Bridge-Wattle Glen (W.H.N.), Yarram (E. E. Pescott). It is thus widely distributed in Victoria. The flowering period is November, December, January.

Nowhere in Victoria is *C. pallida* so very fine as in the Portland district (including Gorae areas). From Gorae West it was recently forwarded by Mr. Cliff Beaglehole, a painstaking and thus very successful hunter of orchids. He writes: "These spider-orchids were in dozens—altogether, at least 100 plants, all pale yellow-green with the tip of labellum deep red."

Rupp outlines his reasons why *C. pallida* should be considered as an independent species (it is oft-times regarded as a form of Fitzgerald's *C. reticulata*, which species it somewhat resembles). After a critical examination of ample fresh material, the present writer endorses Rupp's conclusions also for the following reasons:

(1) *C. pallida* is our only summer-flowering "Spider"—in the consideration of this *Caladenia*, a significant fact.

(2) The perianth-segments are regularly brief, the caudate portion usually thickened, and when clavate (which is rare), occupying the entire part adjoining the lamina, or blade, whereas the polymorphic *C. Patersonii* has long, often much extended segments. In *C. reticulata* the clubs (when present) are more



Caladenia pallida. (For Key see page 180.)

conspicuous, being separated from the lamina by a brief (more or less) isthmus-like portion.

(3) *C. pallida* is a small form, very readily recognized by its golden-green tones, usually *wholly yellow-green* and devoid of markings, occasionally with either deep red-brown or brown tip to labellum.

(4) The minute (not very crowded) glands on the segments (at the tips) are of a different type than those prevailing in *C. reticulata*, which are a globular type (sessile) and of *C. Patersonii*, which are of a mixed character, i.e., sessile, glandular hairy (stalked), or finger-shaped; the last-mentioned prevailing in greater quantity.

(5) The labella-fringe is comprised of a variable but always (?) peculiar type of calli (see figures). These are more or less recurved.

Distribution of *C. pallida*: Tasmania, Victoria.

An interesting teratological form of *C. pallida* was received this season from Gorae West (C. Beauglehole, Coll.), the labellum-lamina of this specimen being *entirely devoid* of the familiar glands from which the genus name is derived.

References:

1. *Gen. et sp. Orchids*, p. 421.
2. *Ibid.*, vol. LVI (January, 1940), p. 142.
3. *Fl. Aust.'sis.*, vol. VI, p. 382.

KEY TO FIGURES

Cal. pallida, L'dl.

Fig. A.—A typical flower of the Portland district, showing some variation* in the segment tips.

Fig. B.—Labellum from side, showing variation in erect portion.

Fig. C.—Variation in the labellum tip.

Figs. D. and E.—Types of calli from the labellum-marginal fringe.

Fig. F.—Twin glands from the column base—usually deep golden yellow, only occasionally white.

Fig. G.—Detail of segment tip, showing also individual pale yellow gland.

Fig. H.—Types of calli from labellum-lamina.

(Note: Natural size of flower 6-7 cm. petal tip to petal tip.)

*The abnormal clubbing depicted at AA is from a solitary specimen collected by the late D. Paton at Boronia (Vic.).

SANCTUARIES AT KERANG

The Fisheries and Game Department of Victoria has advised the F.N.C. that the following Sanctuaries for all native fauna have been proclaimed in the Kerang district:—

Third Lake, Kerang; 670 acres approx.

Second or Middle Lake, Kerang; 540 acres.

First or Reedy Lake, near Kerang; 550 acres.

Tragowel Swamp, South Kerang; 2,391 acres.

In addition, Kow Swamp (7,000 acres) and Gunbower State Forest (48,000 acres) are Sanctuaries for native fauna.

CERTAIN VICTORIAN PLANTS URGENTLY NEEDED FOR
ASSAY (Presence of Medicinal Alkaloids) BY THE C.S.I.R.

(Abstracted by J. H. Willis from correspondence reaching the Committee.)

The Division of Plant Industry has been conducting valuable research for nearly two years on the occurrence and availability of medicinal alkaloids in Australian native plants, with a view to exploiting some of these as a source of essential drugs which are now practically unobtainable from overseas.

It is usual for a particular alkaloid to occur widely within a family of plants. For instance, Hyoscyamine is common in different members of the Nightshade family (*Solanaceæ*), of which Queensland *Duboisia* spp. have recently proved a rich source for this drug; Emetine favours genera of the Madder or Coffee family (*Rubiaceæ*); while Ephedrine is to be sought among the Mallow tribe (*Malvaceæ*). Naturally, Australian representatives of any of these groups are welcome for test purposes, but especially those known to be or suspected of poisonous character.

In conjunction with other kindred bodies throughout the Commonwealth, our Club has been asked to solicit the whole-hearted co-operation of its members in collecting sample material of plants required for investigation by the Chief, Division of Plant Industry, C.S.I.R., Box 109, Canberra City, to which address the correctly prepared samples may be consigned. All that is necessary is to thoroughly dry out the leaves, twigs, or whole plants, as the case may be, and pack them in samples of 1 lb. *dried weight*, with attached labels giving botanical name, locality, and date of collection.

The following is a list of plants at present required by the Division for assay, and the Victorian district likely to yield them in fair quantity. Numbers 1 to 6 inclusive are particularly desired:—

1. *ANTHOCERCIS MYOSOTIDEA* (*Solanaceæ*), "Small-leaf Ray-flower." Whole plants needed.—Mallee (except far north-west), at Jeparit, etc.
2. *ANTHOCERCIS FRONDOSA* (*Solanaceæ*), "Large-leaf Ray-flower." Leaves only.—Grampians and Mt. Arapiles, Alps at Wentworth River, etc.
3. *POMAX UMBELLATA* (*Rubiaceæ*), "Pomax." Whole plant in flower if possible.—North of Maffra and into Alps.
4. *COPROSMA HIRTELLA* (*Rubiaceæ*), "Rough Coprosma." Leaves only.—Yarra and Plenty River banks, Dandenong Ranges, etc.
5. *LAVATERA PLEBEJA* (*Malvaceæ*), "Austral Hollyhock." Leaves only.—Werribee River (S. of Gorge), Murray, etc., but uncommon.
6. *PLAGIANTHUS SPICATUS* (*Malvaceæ*), "Salt Plagiant." Leaves and shoots.—Salt marshes, at Tooradin, Werribee, etc.
7. *VELLEIA PARADOXA* (*Goodeniaceæ*), "Spur Velleia." Whole plants.—Keilor plains, plentiful between Sydenham and Laverton, also Mallee.
8. *PIMELEA STRICTA* (*Thymelæaceæ*), "Erect Rice-flower." Leafy twigs.—Darebin Creek, also Mallee at Jeparit, etc.
9. *PIMELEA HUMILIS* (*Thymelæaceæ*), "Dwarf Rice-flower." Leafy twigs.—Very common throughout the State, and on all formations near Melbourne.
10. *HYBANTHUS FLORIBUNDUS* (*Violaceæ*), "Shrub Violet." Leafy twigs.—Box-Ironbark forest near Bendigo, Dunolly, etc., also in Mallee.
11. *HYMENANTHERA ANGUSTIFOLIA* (syn. *H. dentata*), (*Violaceæ*), "Tree Violet." Leafy twigs.—Common on river banks (Yarra, Goulburn, etc.) and on basalt rises.

12. *SARCOPETALUM HARVEYANUM* (*Menispermaceæ*), "Big-leaf Vine." Leaves.—Uncommon; only in E. Gippsland near mouth of Snowy, Cabbage-tree Creek, etc.
13. *POMADERRIS* SPP. (*Rhamnaceæ*). Fourteen different species in Victoria, of which the "Hazel Pomaderris" (*P. apetala*) is common in fern gullies and the "Cluster Pomaderris" (*P. racemosa*) around our coasts. Leaves only.

WHITE-BACKED AND BLACK-BACKED MAGPIES

It is generally believed that the Black-backed Magpie is confined to the country north of the Dividing Range in Victoria and the White-backed Magpie to the south of the Range. That belief is no longer tenable. A record of black-backed birds in southern Victoria goes back over 45 years, but of recent years, notes of its presence in the south have been increasing steadily. One reason for this extension of range may be that both species of Magpies adapt themselves readily to civilized conditions. They have a special liking for cultivated paddocks and open grass-lands, and should nesting trees be absent the White-backed (and I think the Black-backed) is quite capable of using unusual positions and materials for nesting.

The first record of the two species mating and nesting comes from Mr. David Fleay, who has given me the following account. He reports a male White-backed Magpie and a female Black-backed Magpie nesting in a large manna gum in the Healesville Sanctuary for two consecutive seasons. These birds reared several young, which still inhabit the bush in the environment of the Sanctuary. Some of these young birds had a narrow black ring across the shoulders; others appeared to be normal White-backs. Unfortunately, the Black-backed female disappeared after the nesting season of 1940, and it is presumed she came to an untimely end. This female was in no way a pet. Immediately the birds arrived at the Sanctuary they commenced nesting and always remained wild birds.

Mr. Fleay also reports seeing a number of birds with these black rings across the shoulders in the Kinglake and Flowerdale region, some of which are possible hybrids. I have also seen some of these black-ringed birds on the Melbourne side of Healesville. Miss Joan Anderson, of "The Hermitage," on the Black Spur, records both the white-backed and black-backed birds in that district, so it may be possible for a continuance of nesting records to be made, if they occur, which seems likely.

The Western Magpie of south-west Australia is recognized as an intermediate species between the white-backed and black-backed birds, and should these Victorian birds continue to breed they will make a fine comparative study for naturalists, especially those interested in ornithology.

M. L. WIGAN.

SAVING THE SANCTUARY

Transport restrictions have had a serious effect on the patronage, and therefore the finances, of the Badger Creek Sanctuary at Healesville, and it becomes apparent that unless something is done to remedy the position the famous reservation will have to close down or be drastically restricted.

Obviously, the Victorian Government, which took the responsibility of appointing a Trust to control the Sanctuary—a body composed of representatives of Healesville and Melbourne—should have rendered financial assistance. Lacking that, the Trust has conferred with the Board of the Melbourne Zoo with a view to arranging co-operation or amalgamation. At the time of writing no decision on the matter had been reached.

JUSTICE TO JOHN GILBERT

The eagerly awaited outcome of the finding in 1938 of John Gilbert's diary and his letters to Birdman Gould with the publication of *Strange New World* brings into greater prominence the national service rendered by the author, Alec H. Chisholm. This book, his finest literary effort, forms an important contribution to the history of Australian discovery and exploration. The documentary evidence, brought from England for State guardianship after the lapse of almost a century, provides a splendid theme of an enthralling story. To ensure accuracy of detail and place the narrative in its right setting, intensive and careful research was undertaken among Australiana by the author. The result is the outstanding book of its kind in recent years. (It is published by Angus & Robertson, Sydney, at 12/6.)

The value of *Strange New World* lies primarily in the bringing to light of the scientific achievements of John Gilbert, after nearly a century's "brown-out." Gilbert's pioneer work in ornithology on the first Australian visit (1838-41) disclosed by the letters to his mentor, John Gould, together with the epic period of 1844-45 covered by the diary of the ill-starred expedition to Port Essington, is now revealed in pure, steady flame. Thus John Gilbert stands illumined with his peers, Joseph Banks, Thomas Mitchell, Charles Sturt, Allan Cunningham and others of the splendid company of early naturalists in Australia.

Abundant evidence of the scientific mind of Gilbert is given by Mr. Chisholm in his book. Observations on bird-life, native flora, geological and physical features are written down not only with scientific exactitude, but also with a genuine nature-lover's appreciation of beauty.

Gilbert's attitude to the wild aborigines was far in advance of the anthropological ideas general in his time. He wondered what would happen if white settlement extended to this region (North Queensland): it was clear that natives were uncommonly numerous here at times and the area was so bountiful, so well endowed with vegetable and animal food, that they would surely try hard to preserve the region in its primitive condition.

"Bush life is an excellent sauce for many things," says Gilbert. The pungent commentary on daily happenings, the vicissitudes, the pin-pricks, the unerring flashes of perception into the character and actions of his companions, the encounters with the natives, amusing or ominous, the makeshifts with clothes, the ever-pressing food problems, the physiographic discoveries, the aching beauty of the new landscapes—all these, quoted from the diary by Mr. Chisholm, comprise the sauce.

In the vindication of Gilbert and his association with Leichhardt, Mr. Chisholm has achieved a triumph. Based on the now complete and irrefutable records, his revelation of the characters of the two men and their motivations is masterly. The reader follows with absorbing interest the party's wanderings in the tropical bush and its tragic outcome in the murder of Gilbert.

Many instances are given of the extraordinary incompetence of the leader, not only from the penetrating remarks of the diarist, but also from other reliable sources.

Despite, however, the complete disclosure of the many inherent weaknesses of the German, his myopic moroseness, the total absence of comradeship, and the re-assessment of his accomplishments, Leichhardt remains a mysterious, elusive personality. He disappeared into the great Australian loneliness still a comparatively young man of 35. Will his final story ever be told?

H.C.E.S.

FURRED ANIMALS OF AUSTRALIA

Why has the study of Australian mammals been so neglected by the nature-loving public? Principally, perhaps, because they are nearly all nocturnal creatures, and therefore they are not available for inspection at the times when most field naturalists prefer to make their natural history excursions. There may be something, too, in the suggestion that not many of our mammals are obliging enough to come within easy reach of large towns. But we have known enthusiastic orchid-hunters and ornithologists to make excursions to the most remote corners of the State, and even farther afield, specially to add some celebrated rarity to their lists, just as we have known enthusiastic entomologists to go out into the bush of Gippsland at 2 o'clock on a drizzly morning to collect a good specimen of a ghost-moth. So these two reasons for the neglect of the mammals do not prove to be as cogent as they at first seemed.

The matter is open to argument, but it does seem that our mammalian fauna, because of its intense interest to the academic zoologist, has suffered by lack of any really first-rate popular systematic account of its natural history (as distinct from anatomy, physiology, taxonomy, and all the other academic subdivisions). From Shaw onwards for the last 140 years or so, the big guns of the zoological world have boomed about our egg-layers and our marsupials. At the other end of the scale, "popular" accounts of this or that mammal have not been lacking. But works suitable to the general run of naturalists have been lacking. Le Souef, Burrell and Troughton gave us *Wild Animals of Australia*, which always seemed to err on the heavy side and at the same time contrived to avoid giving the real naturalist too little "meat" to get his teeth into. Wood Jones's *Mammals of South Australia* was for long the only really workable account, and because of its geographical limitations it was not complete.

All this leads up to the announcement that now, for the first time, we have been presented with an account of the Australian mammalian fauna that is really complete; an account that provides the systematist with everything he requires; that gives, in addition, a general historical account of the discovery of our fauna and the announcement of its various unique features; that answers the dozen and one everyday questions about such things as the marsupial birth, what the mother platypus does with her eggs, what ambergris really looks like, and where the dingo fits into the scheme of things. This, in one sentence (albeit a long one) summarises the excellences of the splendid *Furred Animals of Australia* by Ellis Troughton, C.M.Z.S., just published by Angus & Robertson at 14/6. Generous illustrations in colour by Neville Cayley embracing all sections—bats, rodents, seals, marsupials, and monotremes—add distinction and attractiveness to the work.

One criticism has been levelled already against the book—the naming of species has followed rather too much the doctrine of the "splitters." Furthermore, the reader will search in vain for some of the scientific names that had become familiar to him. Where, for instance, is our old friend *Phascodomys* of the text books? We find him under the unfamiliar Geoffroyan title of *Vombatus*, of the equally unfamiliar family *Vombatidae*. Technically, the author is correct in following the only Check-list of Australian Mammals, but he might have stretched a point and mentioned the more familiar names as synonyms. Nevertheless, it is a splendid book, calculated to stimulate public interest in our unique mammalian fauna.

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EXCURSIONS

SATURDAY, MARCH 7.—Botanic Gardens. Leader: Mr. J. H. Willis,
B.Sc. Subject: Trees and Shrubs. Meet at the Herbarium gates
at 2.45 p.m.

SATURDAY, MARCH 28.—Zoological Gardens. Leaders: Messrs. P.
Crosbie Morrison, M.Sc., and F. S. Colliver. Travel by the William
Street tram and meet at the Zoo gates at 2.45 p.m. Alternatively,
travel by Coburg train from Flinders Street at 2.33 p.m. or the
North Carlton train from Princes Bridge at 2.27 p.m. Fare, Second
Return, 5d.

THE CLUB'S PUBLICATIONS

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Vol. LVIII, No. 12



APRIL, 1942

THE Victorian Naturalist

*The Journal and Magazine of The
Field Naturalists' Club of Victoria*

Hon. Editor: A. H. CHISHOLM, F.R.Z.S.

The Author of each article is responsible for the facts and opinions recorded

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Field Naturalists' Club of Victoria

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BUSINESS PAPER FOR MONTHLY MEETING

MONDAY, APRIL 13, 1942

1. Minutes.

2. Subject for the Evening.—“Seals and Eels,” by F. Lewis (Chief Inspector of Fisheries and Game). Illustrated by Lantern Slides.

3. Correspondence and Reports.

4. Election of Member.

AS ORDINARY MEMBER

Arthur C. Crompton,
6 Grosvenor Street,
Moonee Ponds.

PROPOSER

Mr. F. S. Colliver.

SECONDER

Mr. L. W. Cooper.

5. Nominations for Membership.

6. General Business.

(a) Forthcoming Excursions.

(b) Questions by Members.

7. Remarks by Exhibitors.

8. Conversazione.

The Victorian Naturalist

Vol. LVIII.—No. 12

April 8, 1942

No. 700

PROCEEDINGS

The monthly meeting of the Club was held on Monday, March 9, 1942. The President (Mr. P. Crosbie Morrison) presided, and about 60 members and friends attended.

BUSINESS FROM MINUTES

(a) A.R.P. Test.—The President announced details of the test, and stated that Mr. L. W. Cooper and Mr. Ivo Hammet were in charge of the evacuation. Shortly afterwards the trial was made and complete clearance of the rooms was made in 1 minute 38 seconds.

(b) Re Club's efforts to prevent destruction of tea-tree at Brighton.—It was announced that a sub-committee consisting of Messrs. A. H. Chisholm, Ivo Hammet, and R. G. Painter were in touch with the Brighton Council.

REPORTS OF EXCURSIONS

Reports of excursions were given as follows: Botanic Gardens, Mr. J. H. Willis (who stated that Mr. B. Bibby had acted in his absence); Domain, Mr. C. H. Shewin.

ELECTION OF MEMBERS

On a show of hands the following were duly elected as Ordinary Members of the Club: Miss Anna Martin and Mr. Lex. Fuaux.

GENERAL BUSINESS

(a) It was announced that Mr. A. Crompton, from the W.A. Field Naturalists' Club, and Mr. Lord, late of the Horsham Botanic Gardens, were present at the meeting. These visitors were welcomed by the President.

(b) It was announced that Mr. H. N. Beck, secretary of the Gould League of Bird Lovers, was ill in hospital, and it was resolved that a letter of sympathy from the Club be sent to him.

SUBJECT FOR THE EVENING

The subject for the evening was an illustrated lecture on "Soil Conservation," given by Mr. H. G. Strom, Chairman of the Soil Conservation Board. A comprehensive series of photographs showing erosion, its problems and methods of control, together

with a running commentary by the lecturer, gave an insight into a very important matter. At the close of the lecture several questions were asked by members and answered by the lecturer. A vote of thanks was moved by Mr. A. S. Chalk, seconded by Mr. L. W. Cooper, and carried by acclamation.

NATURE NOTES

Nature notes on the following were given: Mr. R. G. Painter on a peculiar display of colours in cloud formations; Mr. V. H. Miller on a wasp's nest in a pipe soldered to a petrol tin; Mr. Cedric Ralph on a jellyfish-like marine animal seen at Portsea; and several members on the two species of Swifts seen about Melbourne suburbs lately.

EXHIBITS

Mr. V. H. Miller—Abnormal frond of tree-fern.

Mr. C. C. Ralph—Large specimen of red-backed spider (*Latrodectus hasseltii*).

Mr. N. Lothian—Cultivated plant of *Drosera binata*.

Mr. C. French—26 species of Victorian and West Australian wood-boring beetles.

Mr. R. G. Painter—Cultivated native plants, including *Ajuga grandiflora*, *Eucalyptus platypus* var. *purpurascens*, *Humea elegans*, *Ixiolæna leptolepis*, *Melaleuca laterita*, *M. pulchella*, *Olearia lepidophylla*, *Scaevola aemula*, *Thomasia petalocalyx*, *Viola hederacea*, *Crotalaria laburnifolia*, *Cassia australis*, *Didiscus coeruleus*.

Mr. H. C. E. Stewart—40 species of native flora from Mt. Buffalo National Park, including *Persoonia juniperina* (in flower), *Polygonum hydropiper* and *Chenopodium album*, not previously recorded from the locality.

NOT A NEW PLACE-NAME

A curious printing error in the last issue of the *Naturalist* credited Mr. W. H. Nicholls with having made a geographical discovery. He was represented as having written "This orchid at Goldenhue," whereas what he wrote was "This orchid of golden hue." Mr. Nicholls insists that while he is always interested in new orchids, he has no desire to discover new towns—although he thinks "Goldenhue" quite a good name.

REMINDER FOR MEMBERS

The last month of the Club year having been reached, members are reminded that subscriptions are due. The Committee would be helped considerably if all members met their obligations promptly.

ROBERT BROWN'S *LYPERANTHUS ELLIPTICUS*

By the REV. H. M. R. RUPP, Northbridge, N.S.W.

I wish to propose here that this interesting Australian orchid should be removed from the genus *Lyperanthus*, and be made the type of a separate genus, to be named *Rimacola* (inhabiting crevices).

The plant is apparently entirely restricted to the central coastal belt of New South Wales, including the Blue Mountains area, which lies between the coast and the main Dividing Range. Here it may be found, often in considerable numbers, growing in moist clayey crevices of the sandstone cliffs, or on wet ledges. It has never been recorded either as an epiphyte on trees or as an ordinary terrestrial on open ground, but is absolutely confined to the cliffs. The usual flowering season is summer-time, but occasionally it has been found in bloom at other periods of the year.

The genus *Lyperanthus*, founded by Brown, has at various times in its history presented taxonomic difficulties to botanists. Reichenbach f. removed the species known in his day to *Caladenia*, but this course was never wholly acceptable, and is now by general consent abandoned. Mueller, on the other hand, deleted Lindley's monotypic genus *Burnettia*, removing its single species (*B. cuneata*) to *Lyperanthus* as *L. Burnettii*. This action, however, has not been endorsed by subsequent workers, and *Burnettia* has been restored. Yet I venture to suggest that there are wider distinctions between Brown's *L. ellipticus* and all other species of *Lyperanthus* than there are between the latter and *Burnettia*.

1. The habit is unique, and unlike that of any other *Lyperanthus*. In itself this fact may be of little weight, but taken in conjunction with other points it is not unimportant.

2. There are no globular or ovoid tubers such as are found in the other species. This, again, must be considered with other points to give it due weight, for by itself it can be paralleled, *e.g.* by *Prasophyllum flavum*. In the case of the latter, however, the flowers are so obviously those of a *Prasophyllum* and of nothing else that no difficulty arises about placing it. This cannot be said of *Lyperanthus ellipticus*.

3. The inflorescence is very different from that of all the other species. The flowering stem is weak, either erect or drooping, according to the precise situation of the plant, but always bending under the weight of the mature flowers, which are in a rather dense terminal raceme, up to about eighteen in number. They are a delicate green, except the labellum, which is white with red splashes or blotches. Thus the inflorescence has no resemblance whatever to that of any of the other four Australian species, or to

that of the New Zealand *L. antarcticus* or any of the six New Caledonian species.

4. The labellum is *clawed and undivided*; in the other species it is sessile and lobed. The sepals are very finely acuminate, and the dorsal one, though more or less cucullate as in the others, is either straight or slightly *recurved* towards the apex.

5. The calli of the labellum, when present (they are not infrequently obsolete, and are represented by a little roughness of the surface near the base of the labellum), consist of little nodules densely massed near the base; occasionally a very few shortly-stalked ones are irregularly scattered on the lamina.

6. The foliage is very distinct from that of any other *Lyperanthus*, although it must be admitted that it is scarcely more so than that of *L. nigricans*. But the inflorescence of the latter indicates its affinities with its congeners, whereas in the case of *L. ellipticus* the inflorescence is very distinctive indeed. And so is the foliation. No other *Lyperanthus* has basal leaves unattached to the stem, and cauline leaves also; no other has leaves of similar form or membranous texture. The nearest analogy to such a leaf *system* is found in Cheeseman's genus *Townsonia*, which, however, has only a solitary cauline leaf, and that almost bracteate.

Taking all these points into consideration, I submit that it will greatly simplify descriptions of the genus *Lyperanthus* if we are no longer compelled to provide for the inclusion of so anomalous a species. I propose, therefore, that in future this cliff-dwelling orchid be known as *Rimacola elliptica*.

Genus *RIMACOLA* Rupp.

Plantae semiterrestres in scopulorum rimis, radicibus teretibus succosis. Folia 2-5, ovato-elliptica vel lanceolata. Flores ad caulis apicem racemosi, 6-18, virides. Sepala acuminata. Sepalum dorsale cucullatum, ad apicem fere recurvum: sepala lateralia patentia. Petala breviora, obtusa, fere deflexa. Labellum unguiculatum, indivisum, lanceolatum, album cum notis rubris: calli praecipue ad basem, obscuri. Columna gracilis elongataque, ad apicem angustissime alata. Pollinia 4, granulata: stigma prominens.

A small genus of a single known species, growing in moist clayey crevices of sandstone cliffs. Rhizomes terete, succulent. Leaves 2-5 basal or cauline or both; the basal ones conspicuously petiolate, the cauline ones stem-clasping. Flowers 6 to about 18, rather crowded in a weak terminal raceme, which is often drooping; delicate green with a white labellum. Sepals acuminate; the dorsal one more or less cucullate, but towards the tip straight or slightly recurved; the lateral ones spreading but hardly divergent. Petals shorter, obtuse, slightly deflexed. Labellum on a slender claw, undivided, white with reddish markings: calli nodule-like, rather obscure, massed near the base, occasionally obsolete and represented by a mere roughening of the surface; sometimes a very few shortly-stalked ones on the lamina. Column slender, elongated, very narrowly winged above. Anther acute; pollinia 4 in 2 pairs; stigma prominent.

Coastal area of New South Wales from Broken Bay to Port Hacking, extending inland to the Blue Mountains.

CAN INSECTS SEE BY ULTRA-VIOLET LIGHT?

By C. DEANE, Melbourne

Most people of to-day realize that the photographic camera can "see" objects under conditions in which they would be invisible to humans. Our range of vision is very limited. By that is meant that of all the radiations of various frequencies and wave-lengths extending over a vast range, we can only see by a very small portion known as the visible spectrum.

The retina of the human eye, with its maximum sensitivity in the *macula lutea*, and minimum in the *macula coeca*, is only affected, for purposes of vision, by rays of wave-lengths ranging from 7500 angstroms (red) to 4000 angstroms (violet). Photographic plates, on the other hand, are prepared which react, for purposes of image production, to rays considerably beyond these extremes in both directions. The idea which inspired these experiments was to find out some possible evidence of insects' eyes being sensitive to rays beyond the violet end of our visible range.

Moths, beetles, ichneumons, and white ants in their mating season, and many other insects, both large and small, are well known to the public from their habit of flying around lamps in streets, parks and gardens at night, especially in warm weather. This power of attracting insects which is possessed by light can be used to test the range of spectrum to which their eyes are sensitive, and we have come to suspect that possibly rays invisible to us will play a part in vision phenomena with insects.

Even in the case of the human eye, there is reason to think that some people can see just a little farther into the ultra-violet region, or that of the infra-red, than other people with a slightly more limited range of vision. Is it not possible, then, that by experimenting with a different type of eye, such as possessed by insects, a more noticeable variation in the range of sensitivity may be demonstrated?

The lamp illustrated in Fig. 1 was designed for the purpose of making observations upon this "effect." The light is generated by an Osira lamp of the high pressure mercury vapour discharge type, made by the British General Electric Co. of England. The author has removed the ordinary glass bulb surrounding the inner "quartz" or silica tube, and has added the lamp-holder or shield here illustrated. This lamp is very rich in ultra-violet rays, and these are used in an attempt to attract such insects as would pass by on a dark night when things are "on the wing."

You must, of course, shut off all the visible rays if you can, or, if not feasible, then as much of them as possible. This is done by means of a "black" glass window of nickel oxide glass, known

as Wood's glass. This transmits a large quantity of ultra-violet rays, but very little indeed of the visible spectrum comes through.

On the first night, 18th September last, there seemed to be very few insects flying about the garden, but three fair-sized moths came bang up against the black glass window at intervals of a few minutes. Each was captured in turn and removed in a glass vessel, but was allowed to play around the lamp for a minute or two before removal. The creature would drop down, crawl away a few inches, and then by a short arc, about one-third of the rim of a soup plate in length, would swing up and back to crash against the window again.

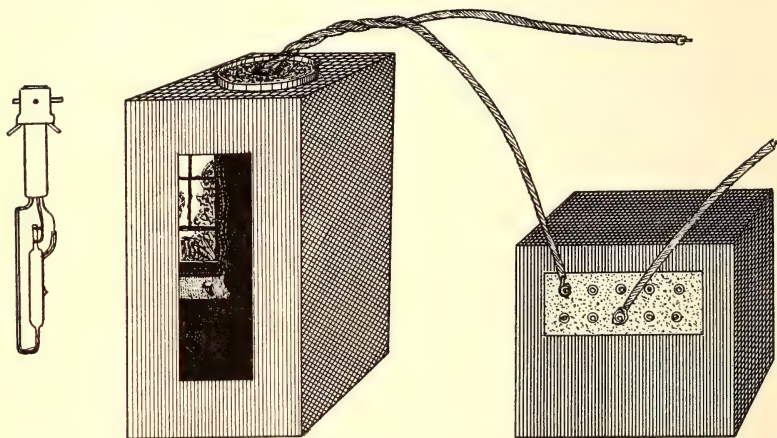


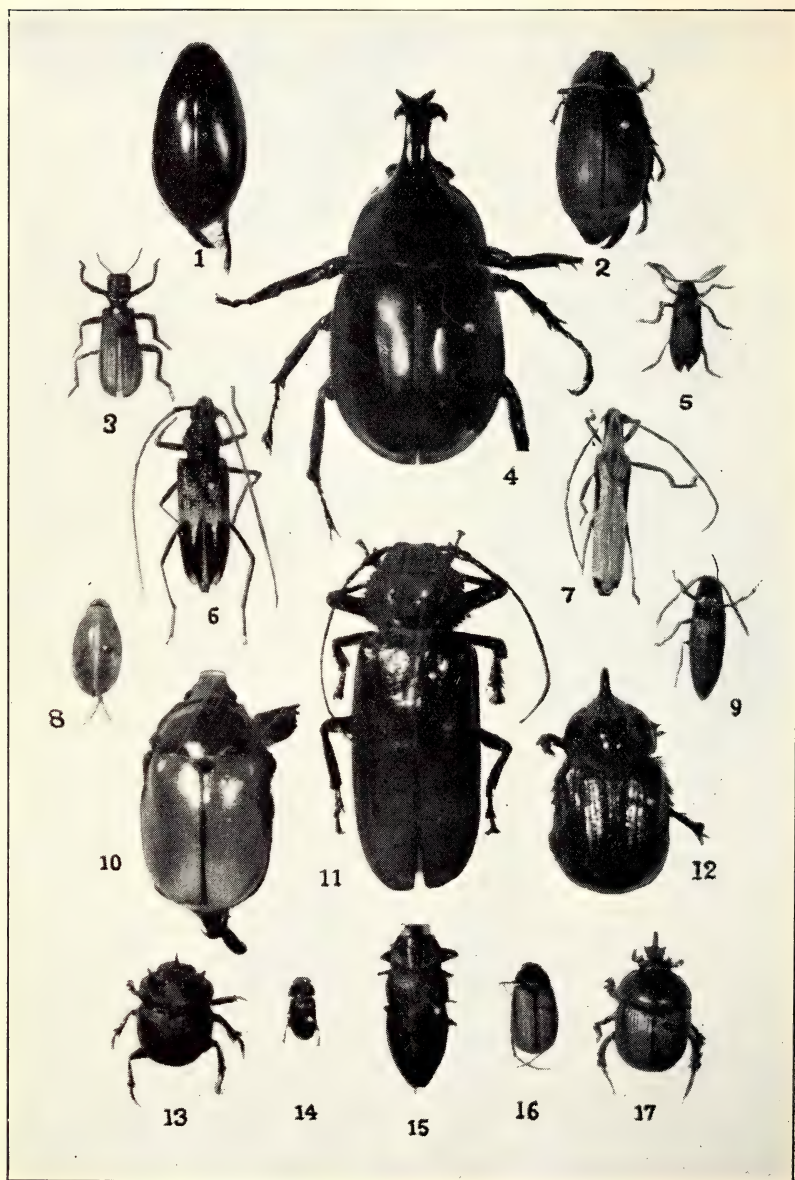
Fig. 1.

The observation of these antics was difficult to observe because the dusky objects were performing their convolutions in almost total darkness, so little actual visible light being available, even with use of the white piece of bristol board on which the lamp stood. An ordinary electric lamp nearby was then switched on for a moment, and revealed that eleven smaller moths also had collected in front of the lamp, but had not been noticed.

This kind of experiment was repeated on several occasions. On one of these the results were rather disappointing; a different locality was used, and the experimenter, in looking for an excuse, could only blame the powerful street lamps for their counter-attraction.

Among the beetles many different families are known to figure in the drama of rushing to ordinary lights. *Cicindelidae* (tiger beetles), *Carabidae* (ground beetles), *Staphylinidae* (rove beetles), *Hydrophilidae* and *Dytiscidae* (water beetles), *Scarabaeidae*

PLATE XVIII



For Key, see page 192.

(stags, chafers, etc.), Elateridae (click beetles and wire-worm beetles), and Cerambycidae (long-horned beetles) are among the best known. All of these can be used for ultra-violet spectrum study.

Three of the largest Australian beetles attracted by light are *Xylotrupes australicus* Thoms and *Oryctes barbarossa* Fab, both Dynastines, and *Eurynassa figurata* Pascoe, a Prionine. The first of these weighs up to $\frac{1}{4}$ oz. when alive, but when dried the inside organs and tissues shrivel and the weight is much reduced. Miss Rita Bentley, of Lismore, N.S.W., captured some specimens of this insect years ago in this way and forwarded them by post. Moreover, there has just come to hand a fine example of *Xylotrupes australicus*, taken a few days ago in Brisbane by the author's sister, Mrs. A. C. Tulloch, who for many years has been making contributions of this kind.

Ennometes lacordairci, Pascoe, is a rare beetle, very few collectors having captured it alive for their collections, and yet the author has taken specimens on three occasions in his father's dining-room at Hunter's Hill.

The coloration of night-flying coleoptera is usually drab—either black, brown, grey or indefinite. But notable exceptions occur, more particularly in regions having a warm climate. In Sydney the brilliant Christmas beetle, or Ruteline chafer, *Anoplognathus analis*, Dalm, essentially a diurnal insect, indulges in flight on hot sultry evenings, and has many times been captured while flying round the interior of a well-lit room, having entered through an open window, attracted by a gas lamp with Welsbach gas-mantle. *Anoplognathus porosus* has been similarly taken.

On the contrary, however, some diurnal insects such as cicadas, although flying also at night if the weather is hot, are unknown to the author to exhibit any light-seeking behaviour. The excitation producing, or failing to produce, this phenomenon is probably due to the structure and chemical constitution of the eye.

In directional control the human eye has available an angle of some 90 degrees in azimuth. Over this arc the eye can be focused so as to obtain a clear image without turning the head. Birds and animals turn the head more. On the estuarine mud-flats near Sydney may be seen a blue crab whose eyes stand out on stalks which are slightly mobile, thus giving some directional control. Insects, on the other hand, are devoid of this faculty. They also lack the acuity of vision enjoyed by the higher animals, as borne out by Forel's observations on the wasps which mistook nail-heads for flies on a wall. As a protection, however, they are compensated to some extent by extreme sensitiveness to lateral movements occurring in surrounding objects, i.e., motion across the field of view. Moreover, this faculty functions over an arc

so wide as almost to complete the circle in the case of dragon-flies, not only horizontally, but vertically and in every intermediate plane.

Within the last three years it has become established and is to-day well known that vitamin A is a constituent in the retina of the human eye, and increases scotopic vision or the power of seeing at night; further, that the said vitamin is a chemical substance. This line of thought might be followed up in the study of ultra-violet sensitivity of insects' eyes.

REFERENCE TO PLATE

1. *Cybister gayndahensis*, MacL.....Dytiscidae
2. *Lepidota frenchi*, Blackb.....Melolonthidae
3. *Natalis porcata*, Fab.....Cleridae
4. *Xylotrupes australicus*, Thom.....Dynastidae
5. *Ennometes lacordairei*, Pas.....Rhipidoceridae
6. *Phoracantha semipunctata*, Fab.....Cerambycidae
7. *Uracanthus triangularis*, Hope.....Cerambycidae
8. *Rhantus pulverulosus*, Steph.....Dytiscidae
9. *Dicteniophorus ramifer*, Esch.....Elateridae
10. *Anoplognathus viridiæneus*, Donov.....Rutelinae
11. *Eurynassa figurata*, Pas.....Cerambycidae
12. *Dasygnathus* sp.....Dynastidae
13. *Onthophagus mneszechi*, Harold.....Coprinae
14. *Aphodius* sp.....Aphodiinae
15. *Merimna atrata*, L. et. G.....Buprestidae
16. *Scitala pruinosa*, Dalm.....Melolonthinae
17. *Bolboceras* sp.....Geotrupinae

COLOUR-CHANGE IN THE SATIN BOWER-BIRD

It may be of interest to readers to know that the young Satin Bower-bird which I bred in 1937 has this year assumed his full adult plumage. In the August issue of the *Victorian Naturalist* brief reference was made to a change that was occurring in the plumage of the bird by the appearance of a few dark violet-blue feathers in the region of the neck and back. Since then the mottling gradually became more and more marked until February (1942), when he fell into full moult, shedding all vestige of green coloration.

The points of particular interest about the matter are:

1. The change to adult plumage occurred in the fifth year.
2. The transformation took exactly six months to complete.
3. Although caged with an adult female in the large flight in which he was hatched, during the whole of the breeding season and some months before, there was no disposition on the part of either to pair, suggesting at least the possibility that the colour change is indicative of puberty and that breeding does not occur, in the case of males at least, until after the fifth year; a point on which I have always had some doubt.

ARNOLD HIRST (Sydney).

THE STORY OF THE MURRAY RIVER

By A. S. KENYON, Melbourne

We have to recognize that the aboriginal, in his countless years of occupation of the Australian continent, knew all about its geography and its physiography, even if he was ignorant of its geology; but his successor, his supplanter, the whitefellow, possibly on account of nautical explorers and governors, hugged the coast-lines and never penetrated inland more than a few miles.

A whole quarter of a century—a generation—elapsed before Blaxland, Lawson and Wentworth scaled the Blue Mountains barrier. Strictly, they did not cross it, but could see across it to the grassy plains of the Land of Promise. (Someone has since named it the Land of Promissory Notes.) They were at once followed by George William Evans, then assistant surveyor at Launceston, a man of great capacity and of much insight or foresight. He was recalled specially for this work, and a little later became Deputy Surveyor-General. The headwaters of the Lachlan and the Macquarie were found, and in consequence the Blue Mountains road, an epic work, was constructed and Bathurst came into being under the aegis of Lachlan Macquarie. This was in 1815, the year of Waterloo.

Then Macquarie, eager for more places to be discovered and to bear his name (or that of Elizabeth, his devoted spouse), sent out John Oxley, the Surveyor-General himself, to follow down the course of these mysterious inland streams which had already given rise to much conjecture. Oxley, a man of the cocksure type, of cramped imagination and devoid of outlook, the antithesis of Evans, went but a comparatively short way down the Lachlan and returned, proclaiming that the country could never be of use for the purposes of civilized man and that it would never be occupied. To quote one of his many diatribes:

"We had demonstrated beyond doubt that no river could fall into the sea between Cape Otway and Spencer's Gulf, at least none deriving its waters from the eastern coast, and that the country south of the Parallels 34° south (Sydney) and west of the meridian 147° 30 east (Wagga Wagga) was uninhabitable and useless for all the purposes of civilized man."

But others, non-official, were not so readily deterred. Their vision may have been greater or it may be that they were simply pushed on by force of circumstances. Still, they consolidated their holdings and slowly extended inland, down the 'Bidgee and up to its headquarters. In 1823 Captain Mark Currie, with Brigade-Major Ovens and Joseph Wild, reached the wonderful pastures of what they named the Brisbane Downs, after the Governor, but which later became permanently the Maneira, Maneroo or Monara

country. One of these unofficial explorers was Hamilton Hume. Here we have to go back a piece.

Alexander Hamilton Hume was the eldest son of Alexander Hume, Superintendent of Convicts. Born at Parramatta in 1797, he was one of the earliest of Australia's native-born heroes. His life from very early years was associated with the bush, and what may be termed his official career as an explorer began in his seventeenth year, 1814. Considering the present-day conditions, it is surprising how young many of our pioneers were explorers, squatters, or merchants years before they had attained their majority. Now, a professional man hardly assumes full responsibility before thirty. It was in 1814 that A. H. Hume, with his younger brother, John Kennedy Hume, opened up the Winge-carribee district.

Hume later joined Alexander Berry, the merchant, in some coastal trips, an association which undoubtedly led to Berry's participation in the Western Port expedition some two years later. There were many other scouting trips. These expeditions were not made for discovery's sake, but to find grazing room for the rapidly expanding herds and flocks. An event of major importance, however, though belated, was the irruption of McKillop, with Macfarlane and Pendergast, into the Omeo plains from Monaro. This journey, towards the end of 1835, marked the discovery of the headwaters of the Murray.

Governor Brisbane, who was keen on fresh discoveries and who evidently did not share Oxley's gloomy views, conceived two schemes of discovery: (1) an expedition from Lake George to Spencer Gulf, and (2) the landing of a party of convicts, with a promise of pardon if successful, at Cape Howe or Wilson's Promontory, thence to travel overland to Sydney. The first was not to take an actuality till 1829, while Hume refused to approve of or undertake the latter. But, backed by his former comrade Berry, now a wealthy merchant and pastoralist, an arrangement was made to start from Hume's own run near Lake George and head for Western Port, the name then given in Sydney to the whole of the coastline discovered by Bass in 1798 from Cape Howe to Western Port Bay. Berry found the stores, and Brisbane, although the expedition was the outcome of his own suggestion, somewhat grudgingly contributed one tent, two tarpaulins, six muskets, pack-saddles and suits, with powder and ball. There were six men, three assigned servants of Hume's and three of Hovell's.

Captain William Hilton Hovell, a retired sea-captain with an adventurous life behind him, was added at the instance of Berry and Brisbane. A worse choice could hardly have been made.

Hovell was no bushman, and by virtue of his age set the course, a straight line over hill and mountain straight for Port Phillip, the mistake being due to inaccurate fixing of the longitudes of Sydney and Western Port Bay.

Hume's farm was left on October 7, 1824, the party consisting of six men, two drays, five bullocks and three horses. It is worth while comparing it with Major Mitchell's 1836 expedition of twenty-five white men, three blacks, thirty horses, more bullocks and a hundred odd sheep, four light carts, four heavy carts and an enormous boat carriage.

Reaching the Cooradigbee River on the 26th, the drays were abandoned and the pack-saddles put into use. The compass bearing course was still adhered to. To quote the original:

Tuesday, November 16th, 1824.—Soon after sunrise they recommence their journey, and having proceeded three miles and a half south (the land gradually sloping as they advanced) arrive suddenly on the banks of a fine river. This was named the Hume. This beautiful stream is found to be not less than 80 yards in breadth, apparently of considerable depth, the current about three miles an hour, the water for so considerable a current, clear. The river itself is serpentine, the banks clothed with verdure to the water's edge, their general heights various, but seldom either more or less than eight or nine feet, inclined or precipitous as they happen by the bendings of the stream to be more or less exposed to the action of the current.

On each side of the river is a perpetual succession of lagoons, extending generally in length from one to two miles and about a quarter of a mile in breadth. These, which are situated alternately on each side of the river, within those elbows and projections which are formed by its windings, often for miles together, preclude any approach to its banks. Each of these lagoons is furnished with an inlet from the river and an outlet into it.

Four days were occupied searching up and down the river for a crossing-place. This the explorers found at Hawksview, just above the Hume Dam. On the 21st the Mitta and the Kiewa were crossed, but were not considered worth naming. The 24th saw them across the Ovens, named after their fellow-explorer, Major Ovens. December 3rd saw them arrive at the Goulburn, which Hume first named the Goulburn and later changed it to the Hovell. Mitchell later wrote: "We made the banks of the Goulburn or Hovell, and note this river has been unfortunate in obtaining a variety of names and therefore less objection can be made to my preference of the aboriginal name, which I ascertained through Piper to be Bayunga." Mitchell, however, spells it "Bayungen" on his map.

Our old friend Dr. John Dunmore Lang used to froth at the mouth on encountering the name "Goulburn." He wrote the following lines before the second Goulburn River was discovered by Hume and Hovell:

I hate your Goulburn Downs and Goulburn Plains,
And Goulburn River and Goulburn Range,
And Mount Goulburn and Goulburn Vale; one's brains
Are turned with Goulburns. Vile scorbutic mange
For immortality! Had I the reins
Of Government a fortnight, I would change
These Government appellatives and give
The country names that should deserve to live.

There is no more to be said about Hume and Hovell except that on their return to the Murray, on January 3rd, they found it easily fordable.

(To be continued.)

DISTRIBUTION OF GYMNORHINA

Recent observations and discussions on the Victorian range of the Black-backed and White-backed Magpies relegate to the scrap-heap the former fixed rule of North of the Divide for the former and South of the Divide for the latter species. The occurrence of both in the north-east of the State has long been established. As early as the summer of 1903-4 the White-backed Magpie was recorded for the Mt. Buffalo Plateau (see *Vict. Nat.*, March, 1904, p. 149), with the added remark that the Black-backed variety was not observed. This remark implies that the Black-backs were expected. The first published indication that both species were found on the plateau was given by Mrs. Blanche E. Miller (see *Vict. Nat.*, March, 1937, p. 188). Later, Mr. P. R. H. St. John included the two on his list at the Chalet. None of these records, however, furnished absolute proof that the two varieties existed on the mountain together.

On 15th February, 1942, the White-backed species, two adult birds with one immature youngster, was seen by the writer near the Chalet stables, a favourite haunt of birds by reason of the horse-feed and the huge stacks of firewood. The same afternoon and the next morning Black-backed birds were discovered not far away, around Lake Catani and in the proximity of the ranger's cottage. The Black-backs were frequently noted on other parts of the mountain and were without question the predominant species. The trio of White-backs, the only ones observed, returned regularly to the same spot. The presence of the young bird, occasionally given titbits by its parents, indicated that the pair had probably bred nearby. Black-backs were not seen in this immediate vicinity, so it was assumed these White-backs claimed it as their own particular domain.

The territorial rights of Magpies, mentioned by Mrs. Miller in her Mt. Buffalo notes, have not been given prominence in the recent discussions. In conversation, bush-minded folk of the Buffalo district declare that if White-backed Magpies trespassed the domain of a Black-backed pair, they would be viciously attacked and perhaps killed. The White-backed is also regarded as the less assertive of the two species. The infiltration of the White-backs on the Buffalo does not altogether reconcile with these statements, though of course they are in the minority. But proved observation has shown the White-back to be the "aggression" superior of the Black-back. Would this account for the more likelihood of the White-backed male mating with the Black-backed female, recorded by Mr. David Fleay at Healesville? A reverse mating of Black-backed male with White-backed female, authentically recorded, would give added interest to this question of avian miscegenation.

H.C.E.S.

NOTES ON CERTAIN SPECIES OF CALADENIA

By the Rev. H. M. R. RUPP, Northbridge, N.S.W.

In the issue of this journal for December, 1941, Mr. W. H. Nicholls describes and figures a new *Caladenia* which he has named *C. Patersonii* var. *hastata*. In the same issue he argues in another article that Dr. Rogers' species *C. cordiformis* is identical with Allan Cunningham's *C. clavigera*. I should like to offer some friendly comments on both these subjects.

(1) The new *Caladenia*. Fresh flowers of this were sent to me in the spring of 1941 by Mrs. K. Mellblom, of Portland, the discoverer. It did not occur to me to associate these beautiful flowers with Brown's *C. Patersonii*. There is, of course, a general resemblance between most of the so-called "Spider" *Caladenias*, but I confess to a mild astonishment at learning that Mr. Nicholls was placing within a species which for over 100 years has been marked by the specific character "sepals non-clavate," a form with the most strikingly clavate sepals among all eastern Australian orchids of this group. With all due respect to the author's high rank among Australian orchidologists, I venture to think this is a serious mistake, and one which may give considerable trouble in the future if it be allowed to stand. Even if there were no other features to distinguish Mrs. Mellblom's plant from *C. Patersonii*, this alone in my opinion would require it to be separated. But there are. The petals in most cases are equally strikingly clubbed; the calli are not identical; and in my specimens at least, the column is broadly winged.

The Portland flower at first impressed me as being very close to Mrs. Edith Coleman's *C. longiclavata*, a W.A. species; and I asked Mrs. Mellblom to send specimens to Mrs. Coleman. The latter has since written:

"I agree that it is confusing to introduce a *Caladenia* with clubbed sepals into a species in which they are markedly absent. Ten years ago I should unhesitatingly have suggested specific rank for Mrs. Mellblom's *Caladenia*, but the years between, if they have not brought wisdom, have taught me to allow for variation within the species. I suggested widening my description of *C. longiclavata*, either to embrace, or to cover as a variety, such specimens as those of Mrs. Mellblom. Some of those which she kindly sent me exhibited considerable variation, the clavate portions of the segments being larger and thicker in some flowers than in others. In the ten specimens received the segments in four are clearly spear-shaped. In four they end in blunt or rounded tips. In two I find a difficulty in deciding. Taking the easy road, I should call them all clavate. Whether variety or species, Mrs. Mellblom's *Caladenia* is quite distinctive."

But Mrs. Coleman makes it clear that she would not give it specific rank. Mr. J. Ros Garnet has written to me on the subject also, and he indicates that while he thinks the plant merits specific

rank, if it is not to have that, he thinks it should be placed in *C. reticulata* Fitzg.

So we have one authority placing this plant in *C. Patersonii* and three who object. But of the objectors, one is in favour of enlarging the scope of a Western Australian species to embrace it, and one thinks that if it must be put into some existing species, that species should be *C. reticulata*. The third objector, who is the present writer, thinks that when doctors thus disagree, the poor thing may well be allowed to stand on its own merits and to say, "I refuse to be smothered under some other species; I am myself, and neither *Patersonii* nor *longiclavata* nor *reticulata*." Therefore I make bold to propose that this *Caladenia* be recognized as *C. hastata*. Mr. Nicholls must forgive me for saying that it is not the name I should have chosen. "Hastate" is a well-recognized botanical term, and its Latin equivalent is the specific name of many plants; but if you consult Willis's *Dictionary of Flowering Plants and Ferns* you will see that it means (a leaf or segment) "with two pointed lobes projecting T at the base," i.e., what we call barbed. "Pilata" (javelin-shaped) would have been preferable.

Mrs. Coleman's suggestion with regard to enlarging the scope of *C. longiclavata* appears to me risky, even though I plead guilty to having myself suggested the affinity of these *Caladenias*. I think there is just as much danger of creating confusion by admitting varieties as there is by "splitting." Particularly is this so if the species and its supposed variant are separated by vast distance, the type being unknown in the east and the variant unknown in the west. Unless the difference is *manifestly* and demonstrably nothing more than a departure from the normal type, it seems to me wiser not to assume identity of species.

Coming now to Mr. Nicholls' identification of Dr. Rogers' *Caladenia cordiformis* with Cunningham's *C. clavigera*; reluctant as I am (like Mr. Nicholls himself) to challenge a species established by one who has reached heights in the orchidological world to which we lesser fry can never attain, I must confess at once that I am in complete agreement, except on the minor point of what should be done with the plant Fitzgerald called *C. clavigera*. Mr. Nicholls has since corrected an error in his article which made him say that he had found the sepals of *C. cordiformis* "invariably clavate." Of course they are not; and we have Dr. Rogers' own statement that in none of the twelve Victorian specimens from which he described his species were they clubbed. Mrs. Coleman has no hesitation "in pronouncing clavate sepals to be the exception rather than the rule in Victoria. In twenty-four herbarium specimens, collected by myself or correspondents in various parts of the State, non-clavate sepals are greatly in the majority. In only three of the twenty-four are the clavate points

of the dorsal sepal visible without a lens. In a folder dated September, 1926, are three specimens in which the dorsal sepals are clearly clubbed, and a lens shows minute clubs to the lateral sepals. A note calls attention to 'clubbed sepals,' clearly indicating that these were rare."

My own experience of the species, chiefly in Tasmania, is hardly in accord with this. The only two known N.S.W. specimens in Australia are clubbed. But this matter of the frequency or paucity of clubbed sepals is rather beside the point. The question at issue is simply whether this *Caladenia* is Allan Cunningham's *C. clavigera* or not. I believe it is. Hooker's plate in *Fl. Tasm.*, II, 28 (t.222 A), labelled *C. clavigera* Cunn., is surely not a different species from *C. cordiformis*? And is it assuming too much to suppose that Hooker had access to Cunningham's type in Herb. Lindl.? Bentham certainly had; for he cites it ("Fl. A.," VI, 382), and he gives a reference to Hooker's plate. Is not this fairly conclusive? Whether Cunningham's plant actually had clavate segments more frequently than non-clavate is a secondary matter. Presumably the flowers he found did have them, or he would not have given the name. Mrs. Coleman asks pertinently whether we are justified in calling "clavate" segments which are merely minutely gland-tipped. Probably not; but it has been done in the past, for I could cite other instances.

With regard to the *Caladenia* figured by Fitzgerald over the name *C. clavigera*, it follows automatically that if Nicholls is right, Fitzgerald was mistaken. But I cannot follow the former in relegating this plant to Fitzgerald's *C. reticulata*, for the following reasons: (1) It is definitely not reticulate-veined, and the labellum has different characteristics. (2) Although Fitzgerald made a mistake, I cannot bring myself to believe that he could critically examine this flower, and dissect it into all its parts, blind to the fact that it was merely a variant of another species of his own. I have collected this orchid myself, and have examined it from areas many hundreds of miles apart, and I find it very consistent and showing scarcely any variability. I think we should keep it as a species, and I suggest that in future it be known as *C. Fitzgeraldii*.

One more point in conclusion. Mr. Nicholls makes no allusion, in discussing *C. clavigera*, to Cunningham's description of the labellum as "*medio subserrati*." Probably Dr. Rogers' description of the mid-lobe of his *C. cordiformis* as having entire margins is true of the majority of flowers. But not infrequently it will be found that the margins of the mid-lobe are quite distinctly "subserrate," or, as I should prefer to put it, irregularly serrulate. This is so in several Victorian and Tasmanian specimens examined by me, and in both the N.S.W. specimens alluded to above.

SOME FERN AND CLUBMOSS NOTES

By N. A. WAKEFIELD, Genoa, Victoria.

Botrychium lunaria (L.) Sw.—In the *Census of Victorian Plants*, the Moonwort is listed as “N.E., Cobungra, v.r.”; but there are several other records of the species for this State: “Snowy Plains on the Ovens, Goulbourne, Caboga and Mitta Mitta Rivers, F. Mueller”; Cobungra, H. Morgan, 12/11/1931; Howitt Plains Hut, W. H. Nicholls, Dec., 1934; Berrima River, towards Cobberas Mts., W. Hunter, Nov., 1938.

Culcita dubia, (R.Br.) Maxon.—This is the present classification of the Rainbow Fern (in *Journ. Wash. Acad. Sci.* 12, 1922, 458). Since Robert Brown first published the species as *Davallia dubia* (in *Prod. Fl. Nov. Holl.*, 157, 1810), it has been placed under the genera *Sitobium*, *Dicksonia* and *Balanium*.

Pteridium aquilinum (L.) Kuhn. var. *esculentum* v. Ald. v. Rosenb.—All the Victorian material of the Common Bracken belongs to this variety, which was first described as *Pteris esculenta* by Forster.

Pteris vittata L.—This name is now applied to the Asiatic and Australian material of the Long Sickle Fern. *P. longiflora* is an American species.

Polystichum aculeatum (L.) Schott var. *proliferum* C.Chr.—The Common Shield Fern is cosmopolitan and has a multiplicity of forms, 41 of which were listed as varieties by Christensen in *Index Filicum*. The Victorian material generally has “bulbils” towards the end of the main rachis, hence its varietal name. Syn. *Aspidium proliferum* R.Br.

Cystopteris fragilis (L.) Bernh. var. *laetivirens*, C.Chr.—The Brittle Bladder Fern is cosmopolitan also, and there are several varieties. The Victorian form was first described by Prentice as *Woodsia laetivirens*, but it is doubtfully distinct from the Tasmanian var. *Tasmanica* (Hooker, 1846).

Cyclophorus rupestris (R.Br.) C.Chr.—The Jewel Fern (Creeping Polypody) of Victoria is quite distinct from *C. serpens* of New Zealand. Robert Brown described the Australian form as *Polypodium rupestris* (*Prod. Fl. Nov. Holl.*).

Azolla rubra, R.Br.—The Red Azolla of Australasia is now generally regarded as a distinct species, rather than as a variety of *A. filiculoides*.

Lycopodium varium, R.Br.—On mossy granite rocks near Genoa Peak, 1941 (N.A.W.). This is the only known Victorian locality for the Variable Clubmoss, last found in Victoria at the same place by Baron von Mueller in 1860. *L. varium*, though included under *L. Selago* by some writers, is distinguished from that species by its distinct spikes, attenuated habit, and lack of reproductive bulbils on the stems.

Lycopodium fastigiatum, R.Br.—The Australasian material is now generally recognized as distinct from the European *L. clavatum*, under which Bentham and subsequent writers listed it as a variety. A suitable vernacular name for the plant in Victoria would be Mountain Clubmoss, for it is invariably alpine or subalpine.

Lycopodium scariosum, Forst.—The only mainland Australian record of the Spreading Clubmoss appears in *Flora Australiensis*, where Bentham quotes: “Baw Baws, F. Mueller”; but the specimen so labelled in the National Herbarium is not that species, so the original specimen appears to have been lost, and hence some doubt is thrown on the record.

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EXCURSIONS

SATURDAY, APRIL 18.—Coburg "Bad Lands." Subject: Geology.
Leaders: Messrs. F. S. Colliver and A. C. Frostick. Meet at the
Bell Street terminus of the East Coburg tram from Swanston
Street at 3 p.m.

SATURDAY, MAY 2.—Sherbrooke Forest. Subject: Fungi. Leader:
Mr. H. C. E. Stewart. Train from Flinders Street to Fern Tree
Gully at 9.18 a.m. thence by the Monbulk bus to Kallista. Fare,
train, 2/5; bus, 1/- each way.

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